FEBRUARY 1953/35 CENTS

Air Trails

FRENCH JET: Fouga "Magister"

DUTCH JET: Fokker S-14 trainer

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Cover: Top picture shows French light training jet Fouga Magister, 840 lb. thrust engine. Center—Dutch 2-place side-by-side Fokker S-14 with 3600 lb. thrust RR Derwent. Bottom—Italian light jet Caproni F-5; 360 lb. thrust Palas.

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FROM THE READER

Air Progress for Reference . . . Many members of our organization who have had the opportunity of looking into your history of aviation issue of Air Progress have expressed their admiration for its completeness and graphic presentation. It has been tagged for our library as a standard reference volume and for this office will be constantly referred to.

Samuel P. Weston,
Editor The Solar Blast,
Solar Aircraft Company,
San Diego, Calif.

Service for CAP . . . This is my first opportunity to thank you for sending me the list of aircraft manufacturers which I requested. Your service was fast and efficient which was much appreciated. I think that I should be able to conduct a successful aircraft identification class as soon as I receive the aircraft pictures from the manufacturers.

Capt. Bernard J. Minardi,
CAP, Executive Officer,
Maywood Squadron, Chicago, Ill.

And We Have Cartoons, Too! . . . I read your magazine every month. I believe it is the best model magazine out. Your coverage of the 1952 Nationals was very interesting. How you people can put out so much information and model news for 35 cents amazes me.

Henry Gutta, Cleveland, Ohio

Purdue Man Has Right Plan . . . Gentlemen, I congratulate you upon your latest plan containing the F-51, Spitfire and Messerschmitt 109E. For years I have searched for suitable scale plans for these planes, particularly the F-51.

So please extend my thanks to Walter Musciano, whose planes I have admired and built for years. I now have the "bug" to build these ships.

John Banta, Purdue University,
West Lafayette, Ind.

PX Special . . . I guess you'll be happy to know that Air Trails is the only model airplane publication sold by the P.X.'s in Europe and believe me if you don't get your copy the day they hit the stand you are out of luck. I think the last three issues have really been outstanding. How about a few more Half-A free flight scalers like the L-19?

That was one of the slickest jobs I have seen in a long time. I plan to do a lot more free flighting and R/C when I get back in harness again.

Lt. E. R. Atkins, Jr.,
APO 216, c/o PM, New York

The Hidden Hinge . . . Can you give me some dope on how to make concealed hinges for U-control elevators and stabs?

Jerry Campbell, Ft. Devens, Mass.

• Both F&B and Sullivan have "hidden" hinges. Sullivan Products (214 W. Dauphin St., Phila.) offers free sample if you send stamped, addressed envelope to Dept. A.

Models by Thunderjet Pilot . . . I am an F-84 Thunderjet pilot here in the Korean theater and have found ample time between missions, of which I have 16 now, to be able to

continue my favorite hobby, model construction. Therefore, I am sending you two shots from various angles of my newest ships. One is of the famous T-28 which saw me through advanced training at Williams

AFB in Phoenix, Arizona. This particular model was one of Berkeley's kits, but I added 4 inches to the wingspread and planked it. "The Quest," a traditional team racer well known to any model enthusiast,

came out fairly well and features 7 coats of red lacquer which presented a terrifically glossy finish. She flew well with a Japanese Enya 29.

Lt. Dwight F. Brooks, USAF, Korea

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Trixter Prof. Trainer 32" A-B . . .	3.50
Trixter Profile 32" A-B	2.50

BURIED IN THIS AD

are most of the new items. Sometimes there isn't time or space to include them. But, if available, we have it.

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Warrior 36" A-B-C	4.95
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Wee Willie 18" AA-A	1.95
Whirlaway 11" AB	1.95
Wing Ding 18" AA-A-B	2.25
Wing Dingue 16" AA	2.25
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Veco RC Master 49" AA-A	9.95
Livewire RC 48" AA	6.95
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Buccaneer C Special 72" C . . .	7.95
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Super Buccaneer 90" C-D	10.95
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Luscombe Sedan 76" C-D	7.50

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Citizenship Transmitter	39.75
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Good Bros. Escapement	13.50
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Same in kit form	27.50
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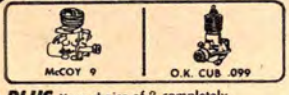

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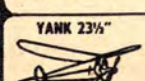
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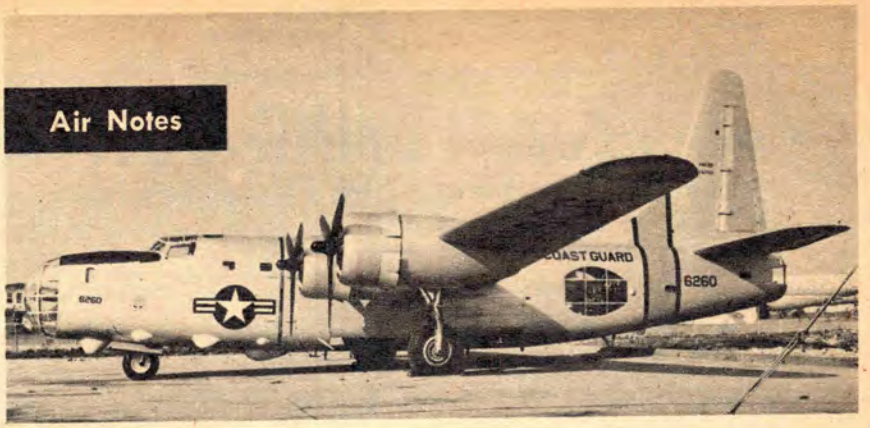

Wartime PB4Y's Do Yeoman Service for C.G.

PICTURED ABOVE is the Consolidated PB4Y-2G Privateer owned by the Coast Guard and used for electronic work, as attested by numerous wart-like projections in the lower front end of fuselage. . . . CESSNA has successfully test flown first turbine-powered lightplane. Craft is an XL-19B Bird Dog used for military liaison work. Powerplant is a Boeing 502-B turbo-prop weighing approximately 250 lbs., rated at 205 hp for take-off. . . . AVRO 698 delta bomber named "Vulcan" in honor of Roman god of fire. . . . BOEING, Convair, Douglas and Martin have been granted preliminary study contracts by AF for the development of a supersonic bomber.

★ ★ ★

TO MONKEYS and mice go the honor of having flown higher than any living creature. As part of the Air Force Air Research and Development upper air research program, two monkeys and two white mice were fired in a rocket to an altitude of 200,000 feet, and recovered alive and in good health after parachute descent.

★ ★ ★

DANIEL GUGGENHEIM AWARD presented to Britain's Sir Geoffrey de Havilland for "forty years of pioneering in military and commercial aircraft and the development of long-range jet transport." . . . NATIONAL AIR RACES to be held this year at Dayton's (Ohio) Vandalia Municipal Airport, September 5, 6 and 7. Dedicated to the 50th Anniversary of Powered Flight, honoring the Wright Brothers. . . . ALL suitable transport aircraft in the future will be equipped for rapid conversion to military support operation, according to Secretary of the Air Force and U. S. Department of Commerce.

★ ★ ★

COMMANDANT Roger Carpentier was first French pilot to fly faster than sound. Attained supersonic speed recently in FAF's "Mystère II" jet fighter. This was not the first time the French swept-wing fighter reached sonic speed; a week earlier two USAF pilots, Maj. John Davies and Col. Richard Johnson, registered Mach 1 in the Mystère during evaluation flight. . . . IN IMMEDIATE post War II era, numerous rumors were floating that the German Luftwaffe was forming suicide squadrons of piloted V-1 buzz bombs as its last stand against victorious Allied air forces. Now it's official. Writing in her book, "Adventures in the Sky," Hanna Reitsch, Germany's outstanding woman pilot, who acted occasionally as Hitler's aerial chauffeur, relates how she and a number of her most experienced colleagues test-flew single and two-place V-1s and acted as instructors for the suicide pilots of the "Death Volunteers," as the squadrons were to be named.

★ ★ ★

AIR FORCE has revealed that Boeing B-47 Stratojets are being produced at a rate of better than one plane per working day. More than 300 B-47s already have been delivered. . . . WRIGHT BROTHERS Memorial Trophy for 1952 has been awarded to Gen. Jimmy Doolittle who is now vice president of Shell Oil Co. . . . CAA has named a team of experts to evaluate jet and turbo-prop transports. Team is headed by George Haldeman, Chief of CAA Aircraft Engineering Division.

★ ★ ★

MORE powerful version of Lockheed Super-Constellation for airline use undergoing flight tests at Burbank, Calif. Plane is powered by four Wright turbo-compound engines. First turbo-compound Super Connie, the R7V-1, is in service with the Navy. . . . DE HAVILLAND Beaver, USAF designation L-20A, in service on Korean front. . . . CONVERTAWINGS INC., convertaplane research and development firm in Amityville, Long Island, working on a quadrarotor (4 rotor) helicopter design. . . . CORPORATION-owned aircraft flew a total of 2,986,000 hours in 1952, some 730,000 more hours than domestic airlines. Fast growing fleet of company planes now total an estimated 9,500 aircraft, of which approximately 1,700 are multi-engine.

★ ★ ★

THREE MAJOR helicopter operators in Los Angeles, Chicago and New York are now furnishing helicopter mail service to 92 American communities. . . . DOUGLAS C-124 Globemaster of Military Air Transport Service made nonstop flight from Ramey AFB, Puerto Rico, to McChord AFB, Washington. Distance covered was 3863 nautical miles. The giant Globemaster II remained in the air for 18 hours 30 minutes.

★ ★ ★

HELIO AIRCRAFT Co. of Norwood, Mass., in production on the four-place Courier model. Plane is all-metal, powered by 260 hp Lycoming engine capable of speeds between 35 and 150 mph. . . . CONVAIR 340 delivered to Hawaiian Airlines. Plane was ferried.

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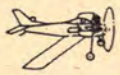

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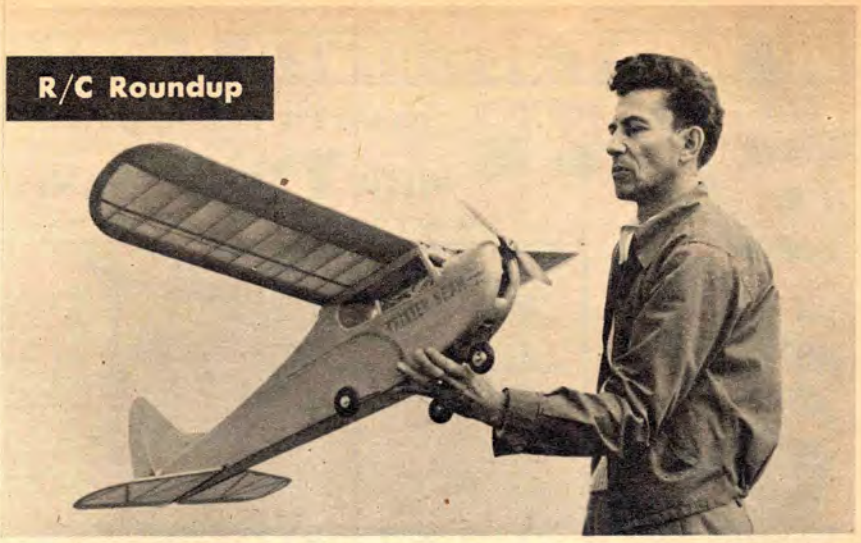
5N15

R/C Roundup



Lou Andrews, noted stunt flyer and commercial designer, with his Trixter "Beam" which will likely appear in kit form. Spans 50.5 in., has 372 sq. in. of wing area; wt., 36 oz.; .09.

Single Channel Elevator and Rudder Control

■ Users of slug-tuned coils have found it difficult to adjust the core and then lock it in place with the usual locknut on the core screw. A nice way around this is discard the locknut and make a little music wire triangle; see Fig. 1. A hacksaw cut must be made in threaded metal stem of the form, as shown at left (remove the core, before slotting). Some of these stems are rather short, so make the cut close to the end. The triangle snaps over the core stem and tension should be such that the core may be turned easily, but will hold under vibration. A little experiment will show the correct tension and size wire to use.

Figure 2 shows a simple means to give rudder and elevator with a single control channel and actuator. It is used with pulse rate and width control. Linkage is set so that when the crankpin is straight down, as at right, the rudder is centered and the elevator is at maximum "down." The actuating motor has stops that limit rotation to about 230 deg. total; when slow pulses are sent, the motor turns the whole distance, and the elevator is up most of the time.

At fast pulse rates, the motor and crankpin "float" in the center of the arc, giving effective down elevator. In either up or down, the rudder may be moved to right or left by changing the pulse length, that is, by varying the ratio of off-to-on signal. The arrangement is fail-safe, in that if any part of the radio equipment fails, the elevator will assume full up, with the rudder to one side or the other. This deal was dreamed up by Bill Sydnor, and the dope came to us through John Worth.

Our last drawing, Fig. 3, shows a motor 2-speed system that has been worked out by Claude McCullough and Jack Williams. This also is used with pulse, or proportional, control. Ry 1 is a low resistance relay of about 3-5 ohms that closes on every pulse which energizes the "right" coil of the actuator. The first pulse received closes Ry 1, which in turn closes Ry 2. The latter is a high resistance Sigma 4F (8000 ohms), which has a 50 mf. condenser across it, and a 6 to 9 V. battery. Note that signal-on gives right, signal-off gives left on the actuator.

If pulses come at a rate greater than about 2½ per second, Ry 2 stays operated, completing the circuit for the "left" coil of the actuator and opening the circuit to the motor escapement. R is simply a fixed resistor equal to the resistance of Ry 1. The pulse box is fitted with a stop so that on the left or off-signal side, the pulses don't quite cease; a normally closed push-button is then used to cut the transmitter completely, which allows Ry 2 to open, and kick the motor escapement one step. Only a half second is required for this action, then pulsing is resumed.

Sw 2 is not turned on until pulses are started, but may be used to test the motor, without having the rest of the equipment in operation. Anything that interrupts the incoming pulses (transmitter failure, flying out of range, etc.) will cause Ry 1 to stay open, Ry 2 then stays open, the motor escapement goes to low speed—or cut off, if so rigged—and the actuator is de-energized, giving near neutral rudder to (*Continued on page* 67)

Fig. 1

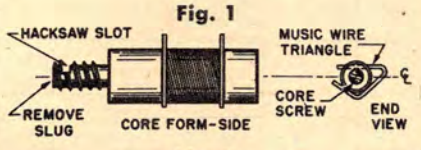


Fig. 2

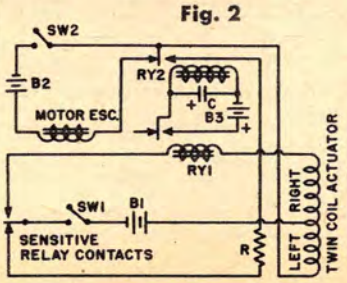
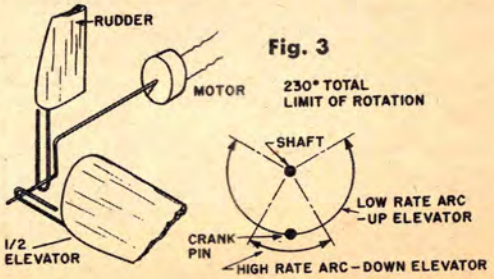


Fig. 3



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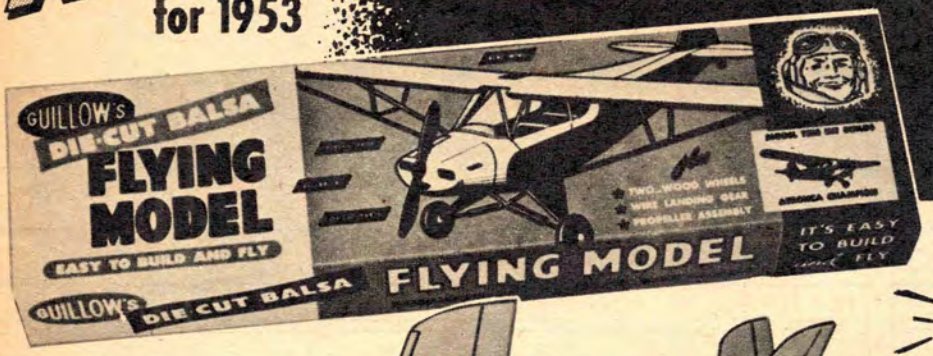
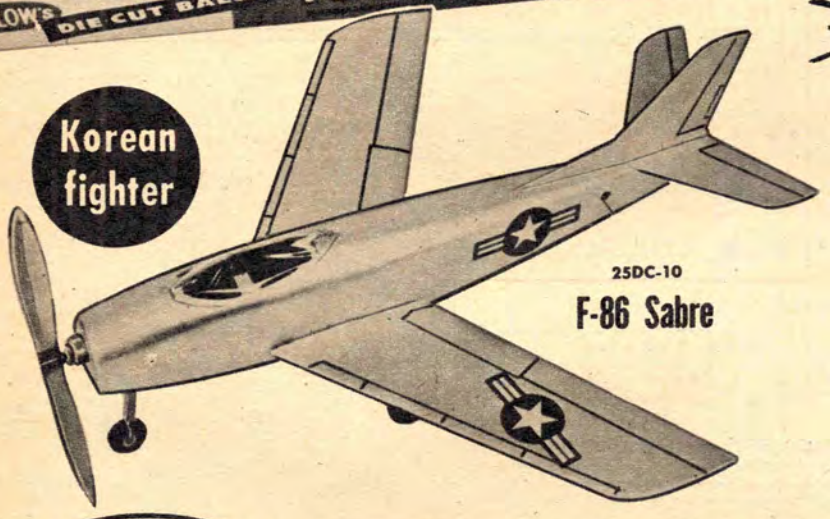


SENSATIONAL IN-THE-NEWS JETS

Here is an all military series featuring planes that have been making the headlines — the F-86 Sabre and its arch enemy the Russian Mig-15, the all weather F-89 Scorpion and the ever popular Skyraider and P-51 Mustang.

Korean fighter



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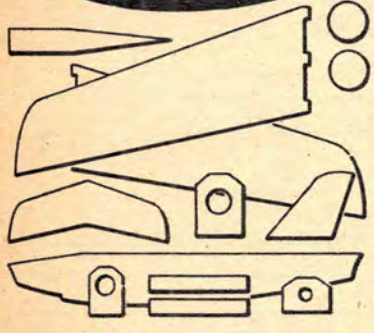

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Convair B-36 Bomber
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Martin B-57A Canberra
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No. Am. T-28 Trainer
Northrop F-89 Scorpion
Grumman F9F Panther
Douglas AD-1 Skyraider
No. Am. P-51 Mustang
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"AT" FORUM

Related? . . . Is the Anderson-Greenwood AG-14 related in any way to a similar plane, the Stearman Hammond safety plane? Both have the same basic design and appearance.

Michael H. Magee, Takoma Park, Md.

• These two aircraft are not related to each other. They are two entirely separate designs.

Fate of the Twin Mustang . . . What happened to the North American F-82 Twin Mustang? This plane is much too good to be abandoned. Its speed of 500 mph and capability of being used as six different types of warplane and maybe more is what our armed forces need. This airplane was on the cover of your magazine a few years ago. Considering its versatility, it could be very useful to the Navy and Air Force. If the single engine can be used in Korea, I think the twin-engined Mustang can be used too.

Denis DeMott, Niagara Falls, N. Y.

• The North American F-82 is no longer being manufactured as North American Aviation is concentrating on the production of jet fighters, of which the F-86D is the latest all-weather version. Because of the speed of jet fighters and high-altitude bombers nowadays, planes with piston engines have become obsolete. The F-82, although fast for its day, is not a 500 mph airplane.

Ju 287 . . . Can you give me some information about Germany's swept-forward-wing bomber—the Junker's 287?

William G. Dingwall, Galt, Ont., Can.

• This aircraft never progressed beyond the prototype, in German hands. It is understood that the Russians finished a few of them and they were flown in the intended final shape.

The aircraft had a wingspan of 66 ft. with a 25 deg. angle of forward sweep. Fuselage length was 60 ft. Although originally designed to be powered by two BMW or Junkers turbojet engines of around 6000 lbs. thrust each, the prototype mounted six BMW 003-A1 engines of 1760 lbs. thrust each. The plane weighed 47,500 lbs. gross, and had a range, with 6600 lb. bomb load, of 1175 miles. Maximum speed at sea level was 510 mph, 540 mph at 16,500 ft. altitude.

RCAF Info . . . Please send me the address of some Canadian agency where I can find information about the Canadian Air Force and the qualifications for entrance.

William De Shazor, Poughkeepsie, N. Y.

• We suggest that you write to the Department of National Defense, Ottawa, Canada, for information regarding the Royal Canadian Air Force.

Can B-36 Circle Globe? . . . There has been a constant argument in our family whether or not the B-36 is or has been able to fly non-stop around the world without a bomb-load. Please inform me if it can fly around the globe.

William Bogle, Detroit, Mich.

• The B-36 has never been flown around the world non-stop. Inasmuch as its maximum range has not been officially released, we do not know whether such trip is within its ability. If fitted with air-to-air refueling device, it could fly around the world without landing, we are sure.

. . . A friend of mine gave me an argument about how many B-36's there are. Could you please tell me, approximately, or is it a military secret?

Robert Redinger, Martin's Ferry, Ohio

• We do not know the exact number of B-36's in service, but believe it is around 130.

(*Continued on page 66*)

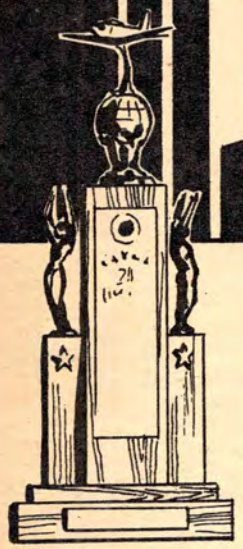
MODELERS: *As the designer and co-partner in the manufacture of the WASP since the beginning. I can promise you continued WASP quality under my sole ownership.*
Bob Holland

WOW! WASP WINS

READ ALL ABOUT IT!

MAKES CLEAN SWEEP!

ALL ½A EVENTS!



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. . . . at the 1952 "NATIONALS"

National Model Airplane Championships at Los Alamitos and Santa Ana, Calif.

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The Mighty Midget that "did it"!

Wasp .049 **DISPLACEMENT**

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FIRST six places.

FREE FLIGHT GAS — CLASS 1/2A — SENIOR
FIRST—plus other places.

FREE FLIGHT GAS — CLASS 1/2A — JUNIOR
FIRST—plus other places.

FREE FLIGHT GAS — ROW — SENIOR
FIRST place. *New record set.*

FREE FLIGHT GAS — 1/2A — SCALE
FIRST—plus other places.

U. S. NAVY CARRIER — CONTROL LINE
FIRST place (twin-engine powered).

P. A. A. LOAD — CLASS 1/2A
FIRST, Third and Fourth.

P. A. A. CLIPPER CARGO — CLASS 1/2A
FIRST — 17 1/4 ozs. plus 4 oz. dummy. *New record set.*

Above is a partial list of known "Winners with Wasp" compiled to the best of our knowledge and belief. Watch for a more complete list in future ads.

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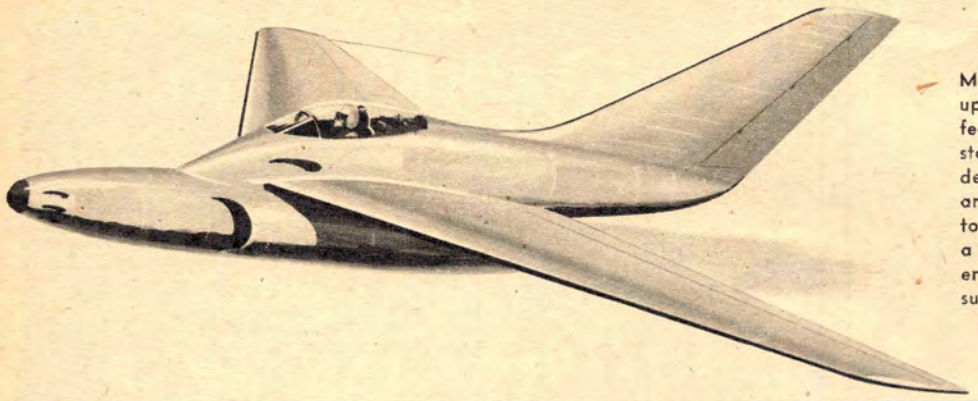
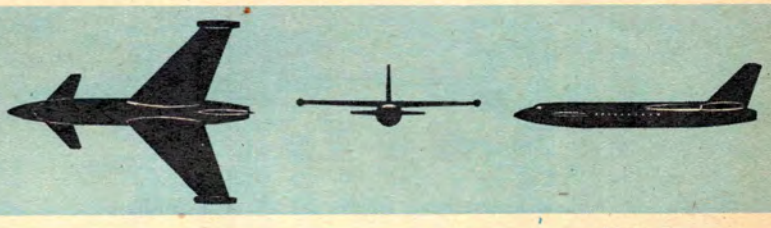
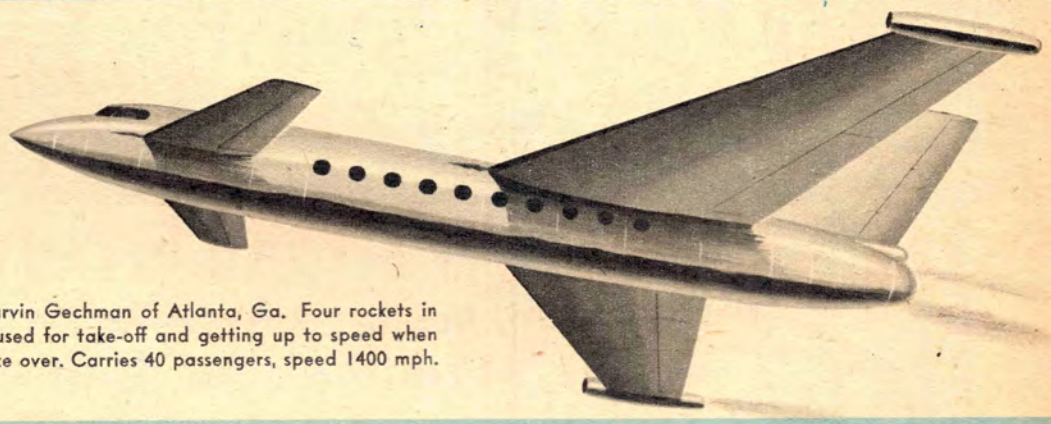
1ST AWARD
Variable sweep wing jet intercepter



Manuel Romero of Lake Worth, Fla., comes up with an interesting jet interceptor design featuring a variable sweep wing. In normal state wing is swept back approximately 30 deg. and the angle can be increased to around 45 deg., permitting the interceptor to reach speeds of Mach 1.5. Powerplant is a 9500 lb. thrust turbojet. Two rocket launchers in the nose can fire a total of 48 rockets, supplemented by six cal. .50 or .60 m.g.s.

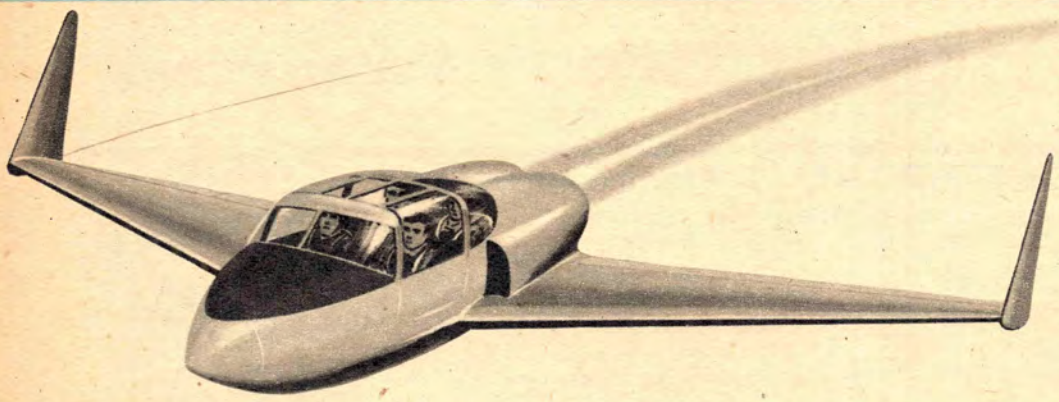
2ND AWARD
Ram-jet and rocket transport





Canard type airliner by Marvin Gechman of Atlanta, Ga. Four rockets in aft section of fuselage are used for take-off and getting up to speed when wingtip-mounted ramjets take over. Carries 40 passengers, speed 1400 mph.

3RD AWARD
Light commercial transport



A five to six passenger light jet transport by A/lc David E. Fetherston of Lowry AFB, Colorado. Engines develop 1000 lbs. of thrust each. Plane can fly on either. Top speed with both is estimated at 500 mph, 300 mph on one. Cabin is sealed and pressurized. Solenoid lock prevents opening door when engines are running. Span 35 ft.

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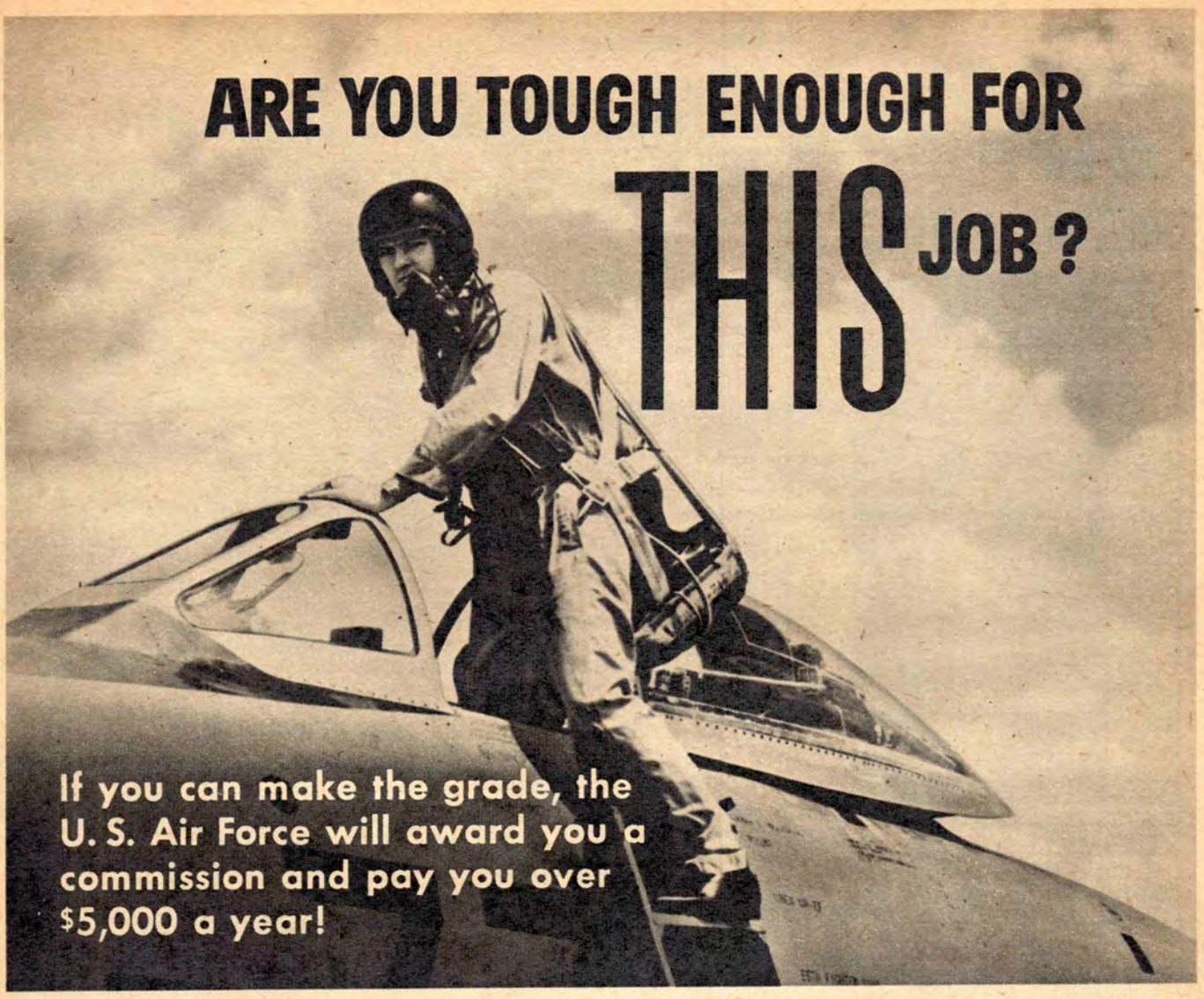

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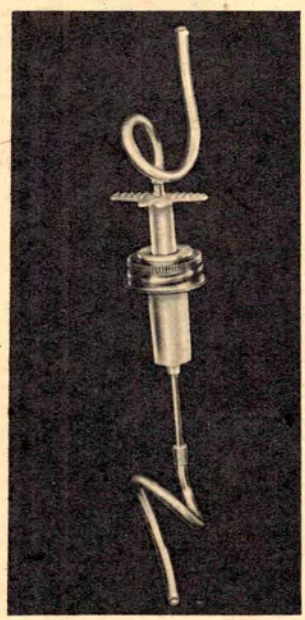

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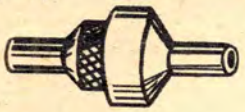

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No Mystery in Flight

■ One of the best ways that we can "keep America first in the air" is to pass along our knowledge to others to follow. It is not only important to them but can be a lot of fun for ourselves if we use some very simple bits of equipment and a little imagination.

Here are several ways to explain to others the mysteries of the science of flight—and have fun doing it. All you need are a few bits of equipment you can probably find right in your own home.

Fig: 1

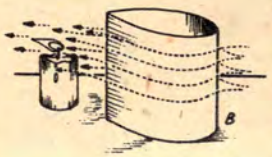
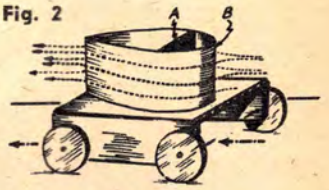


Fig. 2



To understand airflow in relation to aircraft and flight, all you need is a candle stub, a few bits of paper and cardboard and some paste. First, let's look at Fig. 1.

Take a square of cardboard about three inches on a side and hold it in front of a lighted candle. Blow gently against it and your "student" will see that the air goes around the cardboard, and then tumbles behind it in confusion, causing the candle to flicker and point its flame toward the back of the cardboard. These air eddies or turbulence cause a partial vacuum behind the card which draws the flame toward you, and on a larger scale behind a larger plate or area would cause drag behind an aircraft or part of it to hold the aircraft back. This, behind the card, is called drag as shown in "A" of Fig. 1.

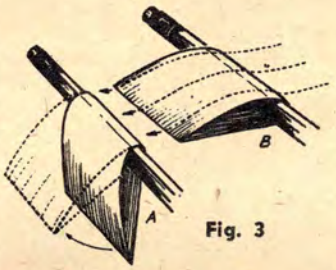


Fig. 3

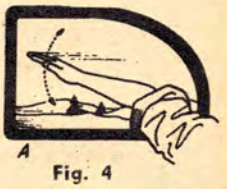


Fig. 4

To see what happens when a shape is streamlined, take a piece of paper three inches wide and about nine inches long and paste it together into a circle. Flatten it into a streamlined shape as at "B", Fig. 1.

Place this streamlined shape in front of the candle with the sharp edge a short distance from the burning handle. Now blow gently against the rounded front edge of the streamlined shape and see what results. The air flows smoothly about it and continues straight behind it in a smooth even flow causing the flame to be blown away from you, almost as if there was nothing between you and the flame. This demonstrates how a streamlined shape passes smoothly through the air without turbulance or "drag" behind it to slow it up. Such a shape requires much less power to move it through the air. Let's prove that point too.

Fig. 6

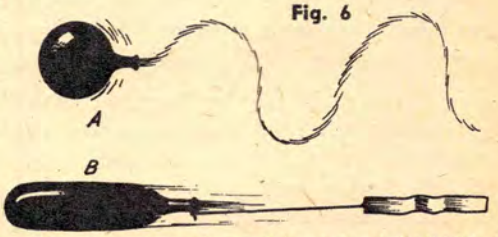
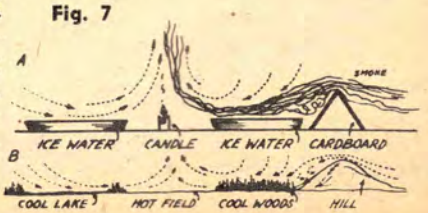


Fig. 5

In sketch or Fig. 2 we see a simple "cart" made from a small piece of cardboard. Four wheels are cut from the cardboard and attached with four common pins so that it rolls freely along the table. (Corrugated cardboard as shown is best.) Now paste a small square piece of the cardboard, "A", (*Continued on page 62*)

Fig. 7



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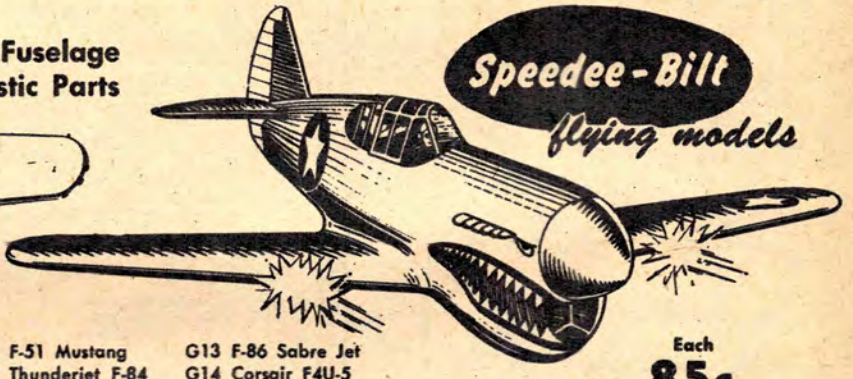

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G2	Aeronca	G6	Long Midget	G10	Thunderjet F-84	G14	Corsair F4U-5
G3	Monocoupe	G7	Cessna	G11	Navion	G15	Warhawk P-40F
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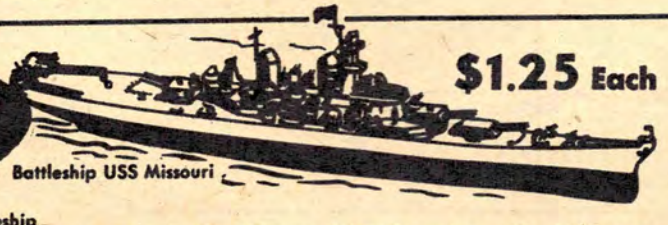

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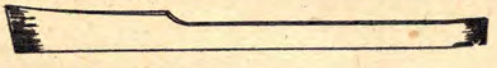

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The day of the Delta

Convair's XF-92A research interceptor, which pioneered the world trend to delta wing aircraft four years ago, is shown for the first time in a head-on flight view high above California's Mohave Desert. Barely visible in cockpit is Major Charles E. (Chuck) Yeager of the U. S. Air Force, first man to fly faster than sound. The parallel lines on wing at left are rows of wool tufts that show direction of airflow. Movie cameras installed in plane's vertical fin provide film records of each flight. USAF research is nearing completion at Edwards Air Force Base and the XF-92A, forerunner of the supersonic F-102 delta wing interceptor recently ordered into production, soon will be taken over by the National Advisory Committee for Aeronautics. NACA will use the pioneer "delta" to substantiate ultra-high-speed airflow theories.

TU-faced Reds

By WILLIAM GREEN

Little-known facts about two Russian bombers that pose a real threat; design refinements show Reds constantly improve aircraft

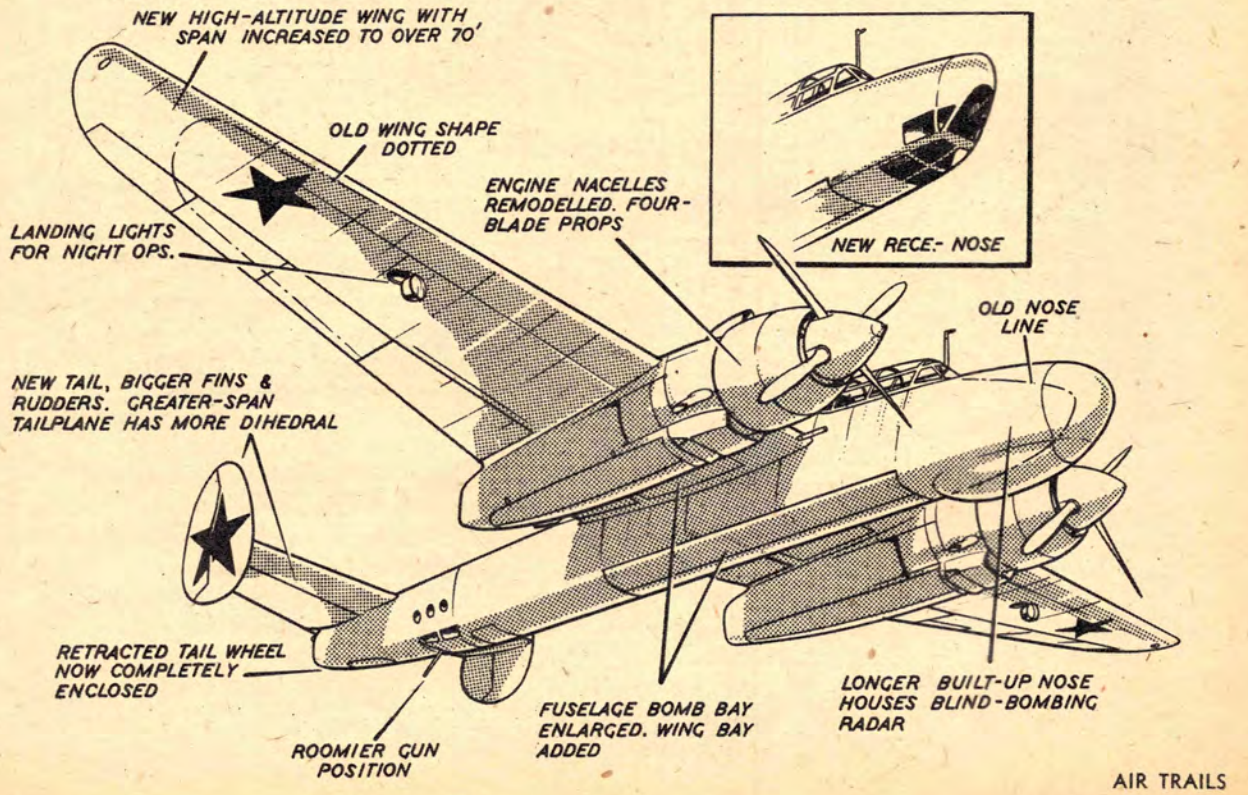
■ Throughout World World War II main Russian productive effort was centered on vast manufacture of strictly orthodox aviation equipment. Airplane types were simple and adaptable for a wide variety of roles, accent being placed on rapid availability and production simplicity rather than fullest fighting efficiency. Combat machines were reduced to a few *all-rounder* types, but by the end of the war the Soviet air staff realized that a higher degree of specialization had to be accepted, however unpalatable, if qualitative parity with the West was to be achieved.

Tu-6, high altitude pathfinder and recon. bomber.

Prime importance was given in the immediate postwar years to the evolution of specialized single-seat day interceptor and multiseat all-weather interceptor fighters, with specialized attack airplanes taking second place on the priority list. As an interim measure, a policy of modification and improvement on late-wartime designs was adopted to suit the machines to fill specialist roles.

Hitherto, little has been revealed of this interim development program, but the disclosure on these pages of specialized models of the highly-successful Tu-2 general-purpose light bomber offers further evidence of the stress placed by the Soviet air staff on the importance of attaining the exacting technical standards set by the USAF with the least possible delay.

Designed by Lieutenant-General Andrei N. Tupolev during the war years, the Tu-2 is still considered to be very much *first-line* equipment by the air arms of Russia, Poland and China, and although replaced in Europe by the twin-jet Ilyushin Il-28, *it remains the*


NEW HIGH-ALTITUDE WING WITH SPAN INCREASED TO OVER 70'
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LANDING LIGHTS FOR NIGHT OPS.
NEW RECE:- NOSE
OLD NOSE LINE
NEW TAIL, BIGGER FINS & RUDDERS. GREATER-SPAN TAILPLANE HAS MORE DIHEDRAL
RETRACTED TAIL WHEEL NOW COMPLETELY ENCLOSED
ROOMIER GUN POSITION
FUSELAGE BOMB BAY ENLARGED. WING BAY ADDED
LONGER BUILT-UP NOSE HOUSES BLIND-BOMBING RADAR

standard equipment of light bomber regiments of the Soviet Asiatic air divisions.

Tupolev's sole wartime design to enter service and for which he received a Stalin Prize in 1943, the Tu-2 began to appear during the final campaigns on the Eastern Front during 1944-45, when it was used to precede waves of assault aircraft in the "softening-up" operations. Initially powered by two 1,640 hp ASh-82F fourteen-cylinder radials, the Tu-2 rapidly proved to be a good weapon by wartime standards and, by Russian standards, one of their best equipped.

Quality manufacture of the Tu-2 continued during the immediate postwar years, this airplane remaining exclusively Russian until late 1950 when a number were supplied to Polish squadrons. That it has since been supplied to the Sino-Communist air arm was evidenced earlier last year by the abortive attempts made with this airplane to attack U.N.O. positions in Korea.

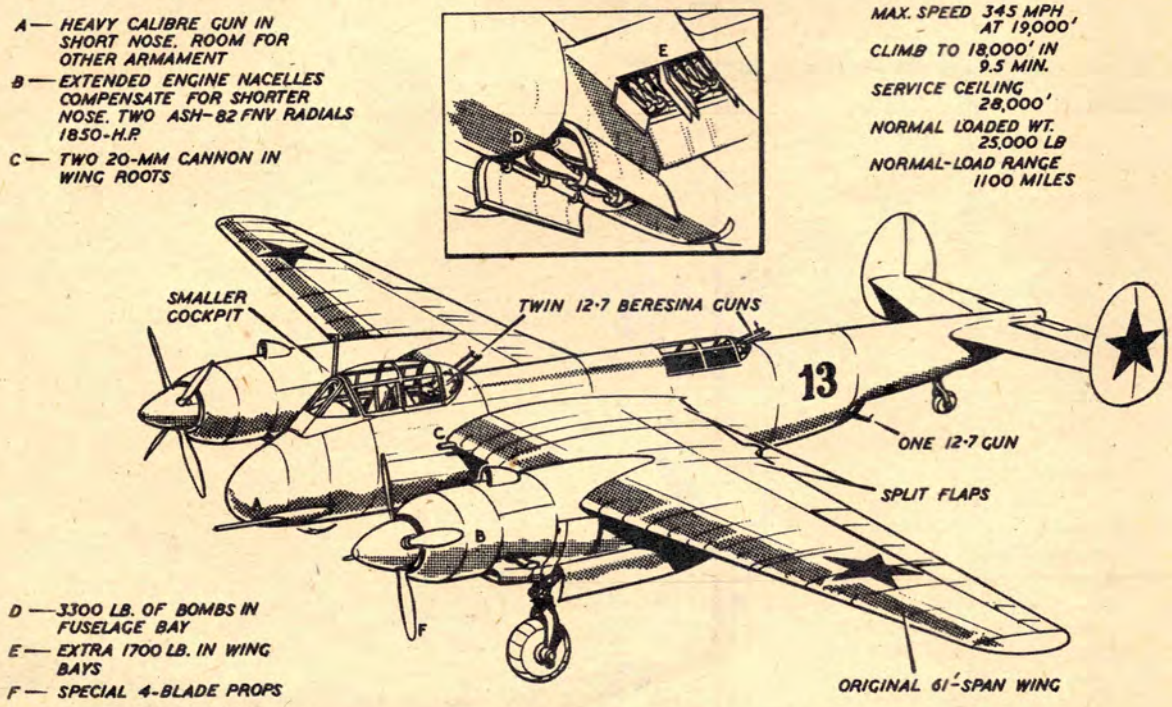
The Tu-2 has come in for much progressive modification during its service life; late production models were powered by the 1,850 hp ASh-82FNV radials, four-blader airscrews replacing the three-bladers used by initial production models, and the top speed was boosted to 357 mph at 19,000 feet. A specialized ground-assault model was developed to carry a 40-47-mm caliber gun offset to port in a shortened, blunt nose. The cockpit of this model was somewhat redesigned and the nacelles were extended to compensate for the shorter nose.

In addition to the large caliber gun, this version of the Tu-2 carried two 20-mm guns in the wing roots and five 12.7-mm Beresin guns in dorsal and ventral positions. The standard fuselage bomb-bay carried 3,300 pounds of bombs and, over shorter ranges, extra wing bays could accommodate an additional weight of 1,700 pounds of anti-personnel bombs. These wing bays could be supplanted by rockets mounted between the engine nacelles and the fuselage sides.

Final production models of the standard Tu-2 had their wing span increased from 61 to 62 feet, larger end-plate fin and rudder assemblies, increased dihedral on the tailplane and a fully retractable tailwheel, but so extensive was the redesign work involved in the next variation on the Tu-2 theme—a high-altitude pathfinder recon bomber—that this model became the Tu-6.

The Tu-6 has been seen in two versions; a straightforward high-altitude reconnaissance bomber with a redesigned nose of more angular appearance than that of its predecessor, and a lead-ship version with a built-up nose, bulging below the fuselage under-line, housing blind bombing radar. The wing of the Tu-6 spans over 70 feet (as compared with 62 feet of the late-production Tu-2), has negligible taper on the leading edge and broad, rounded tips; the engine nacelles have been cleaned-up; the fuselage bomb-bay enlarged and the span of the tailplane increased.

Ground assault version of the Tu-2 tactical bomber.


A— HEAVY CALIBRE GUN IN SHORT NOSE. ROOM FOR OTHER ARMAMENT
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MAX. SPEED 345 MPH AT 19,000'
CLIMB TO 18,000' IN 9.5 MIN.
SERVICE CEILING 28,000'
NORMAL LOADED WT. 25,000 LB
NORMAL-LOAD RANGE 1100 MILES
E
D
SMALLER COCKPIT
TWIN 12·7 BERESINA GUNS
13
ONE 12·7 GUN
SPLIT FLAPS
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B
F
D— 3300 LB. OF BOMBS IN FUSELAGE BAY
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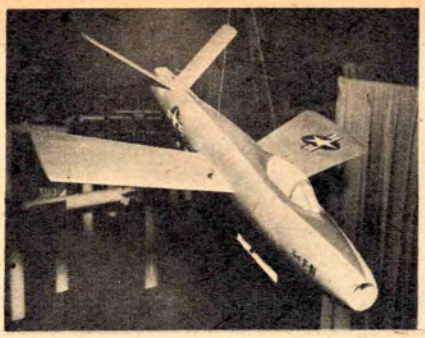
ORIGINAL 61'-SPAN WING

Planes Go Skiing



V-type tail was one of experimental empennages on Republic XF-91 "Thunderceptor"; also studied was T-type with stab atop rudder.

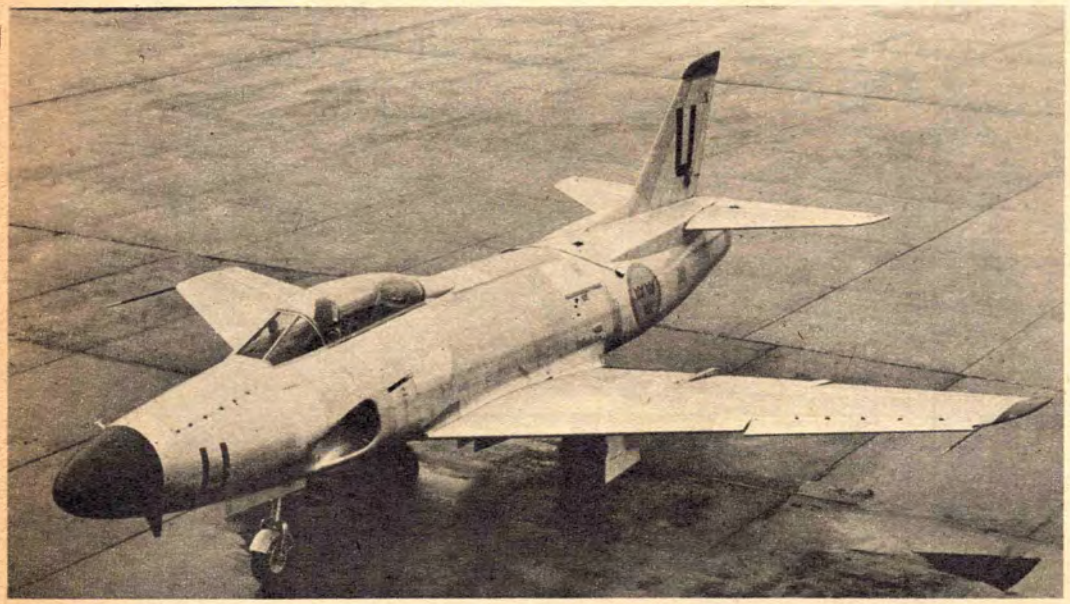
France's latest jet fighter-bomber, the S.N. C.A.S.O. Vautour. Landing gear is bicycle type; Atar engines, 6000+ lbs. thrust.

New York Airways' first Sikorsky S-55 Skybus taking off from LaGuardia Field during opening ceremonies with full load of mail and parcel post. Present operations are between LaGuardia, Idlewild and Newark airports, a radius of 17 miles. Eventually service will extend to a 50 mile radius and will serve 43 communities in New York, New Jersey and Connecticut. Two more S-55s are on order. All New York Airways helicopters have been certificated to carry passengers and commercial freight as well as air mail and parcel post. The Skybus is fitted with emergency flotation gear and equipped with powerful radio and navigation instruments that are new for 'copters.

Left: model of Douglas D-558-2 Skyrocket equipped with a Hydro-ski. This device, though not new, has been under development by the NACA and the Navy. Ski utilizes hydroplaning principle to maintain buoyancy so long as the plane has sufficient forward speed. Upon landing, craft must taxi rapidly onto a ramp or shore. Actual experiments, using full-scale planes, SNJ and Piper, have been successfully conducted by All American Airways at Wilmington, Del. The Navy has no plans for this particular application of the hydro-ski to an experimental research aircraft, but announced new seaplane fighter, XF2Y, so equipped.

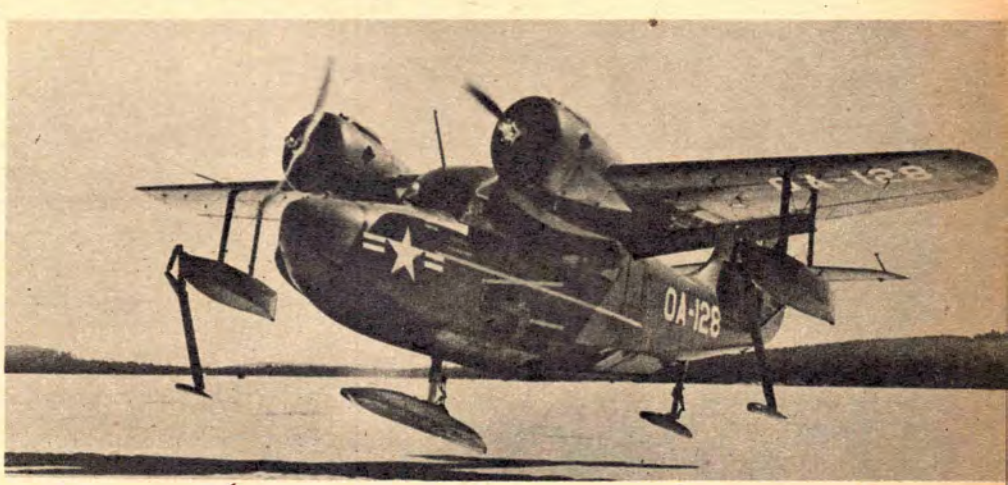
The S.I.P.A. S-12 French two-place advanced trainer now in production for the F.A.F. Plane is a development of the German Arado Ar 396, several of which were built by the S.I.P.A. concern during the occupation period. Construction is all metal. Engine a 580 hp Renault 12S. Span is 36 ft. 1 in., length 30 ft. 7½ in. Maximum speed 224 mph., service ceiling over 27,000 ft., cruising range 435 miles.

S.I.P.A. S-200, French light jet plane. Carries a crew of two and is designed for both military liaison and transitional training, is also a fast sport plane. Powered by a 360 lb. thrust Turbomeca Palas engine. Air intakes are in thickened wing roots. The S-200 has a sea level speed of 267 mph. Cruising speed at 3280 ft. (1000 meters) is 236 mph. It can climb at a rate of 1150 ft. per minute. Maximum ceiling is 26,250 ft. Wingspan 23 ft. 7 in., and the length is 16 ft. 9 in.



SAAB 32, Sweden's latest jet interceptor, air force designation A-32. Now in large-scale production for the Swedish Air Force. Plane is in the 700 mph class and is powered by a British Rolls-Royce Avon engine of 7200 lbs. thrust. Armament includes cannon, bombs and rockets; features comprehensive electronic equipment for navigation and combat in all kinds of weather. Large Fowler flaps and leading edge slots on its swept wing improve plane's stability and maneuverability at slow speeds. The new aircraft is primarily intended for attack against ground and sea targets. Is called Lance.

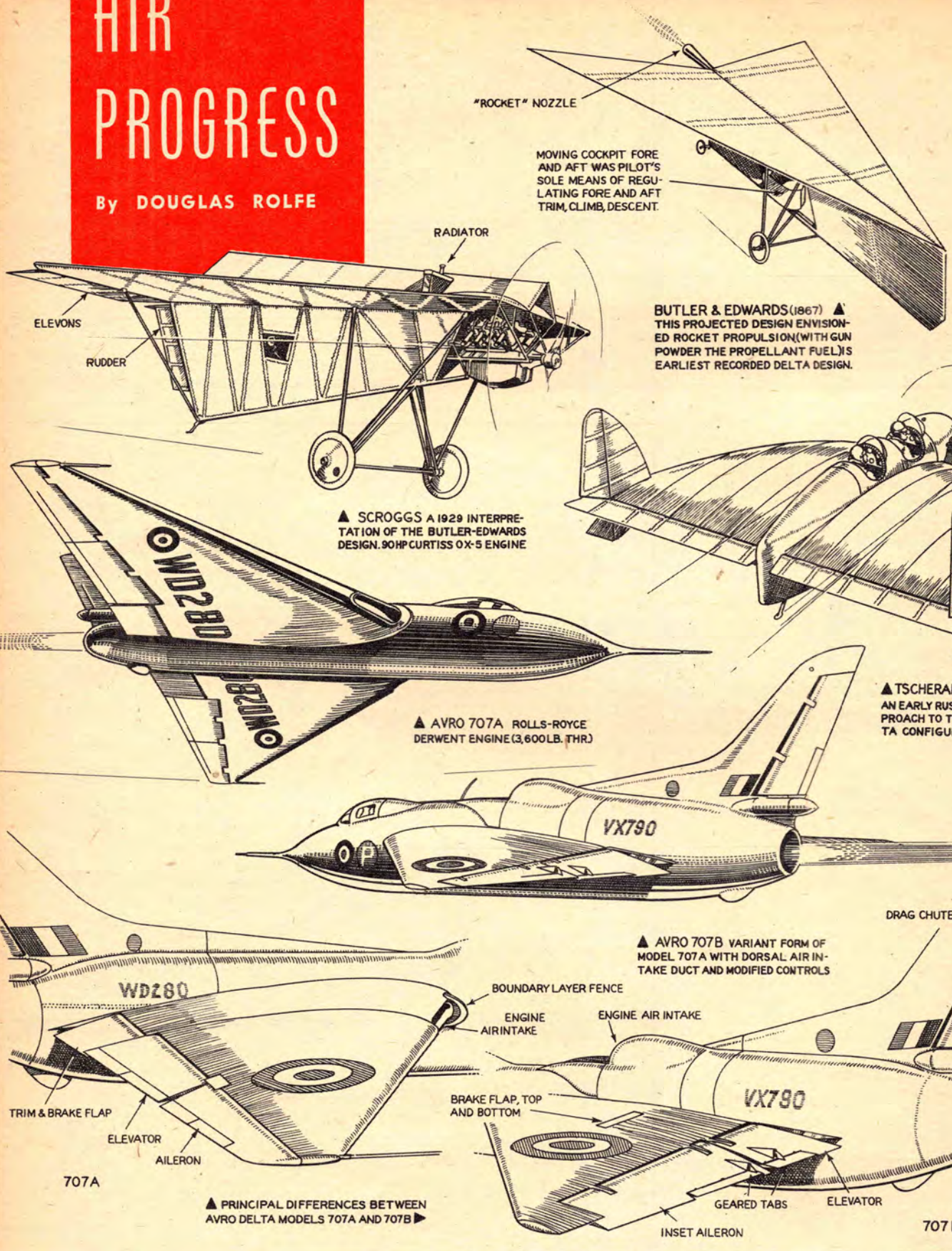
Grumman JRF Goose equipped with hydro-skis taking off from the frozen Lake Winnepesaukee, in New Hampshire. This is another use of the hydro-ski, on aircraft with buoyant hulls where the hydro-ski lifts the hull rapidly out of the water, thus cutting down the drag which slows take-off procedure. Edo Corp. conducted the experiments, proving that the hydro-ski is equally adaptable either for water or snow and ice operations. Edo found that take-off time in water was cut approximately in half, and landings could be made in waves about three times higher than would normally be considered safe for this particular type of plane.



Production type Piper Twin Stinson. Tail has been modified to single fin and rudder instead of earlier twin rudders. Wing tips are of fibreglass. In this photo plane shows its ability to perform on single engine. All production models will be equipped with Hartzell full-feathering propellers. Engines are Lycomings, each rated at 150 hp. Plane will be ready for delivery some time in middle of 1953.

AIR PROGRESS

By DOUGLAS ROLFE



▲ BUTLER & EDWARDS (1867) THIS PROJECTED DESIGN ENVISIONED ROCKET PROPULSION (WITH GUN POWDER THE PROPELLANT FUEL) IS EARLIEST RECORDED DELTA DESIGN.

▲ SCROGGS A 1929 INTERPRETATION OF THE BUTLER-EDWARDS DESIGN. 90 HP CURTISS OX-5 ENGINE

▲ TSCHERANOVSKY AN EARLY RUSSIAN APPROACH TO TRUE DELTA CONFIGURATION

▲ AVRO 707A ROLLS-ROYCE DERWENT ENGINE (3,600 LB. THR.)

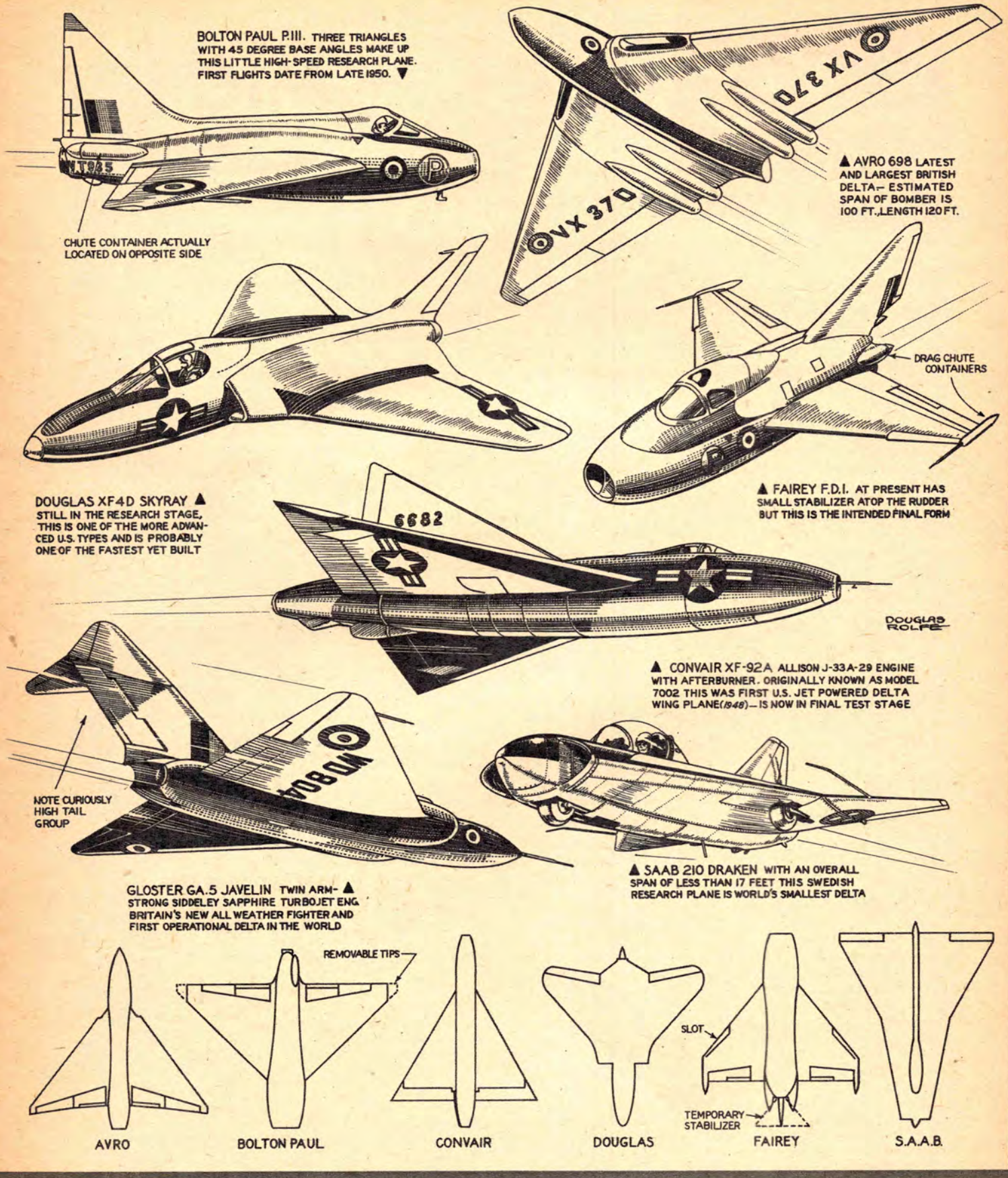
▲ AVRO 707B VARIANT FORM OF MODEL 707A WITH DORSAL AIR INTAKE DUCT AND MODIFIED CONTROLS

▲ PRINCIPAL DIFFERENCES BETWEEN AVRO DELTA MODELS 707A AND 707B ▶

DEVELOPMENT OF THE DELTA WING

Interest in the delta wing configuration goes back as far as 1867 when two students of aerodynamics, Butler and Edwards, laid down the general principles for an aircraft of this type. As the illustration shows, their projected design was little more than a glorified paper dart.

The same general idea reapppeared in the mid-twenties in the shape of the Scroggs Dart which was actually built. Yet another close approximation to the true delta configuration was designed and built at about this same time by Tscheranovsky. The two latter designs were not pursued, and the next we hear about this type of wing is the experimental work conducted by Lippisch in Germany during World War


BOLTON PAUL P.III. THREE TRIANGLES WITH 45 DEGREE BASE ANGLES MAKE UP THIS LITTLE HIGH-SPEED RESEARCH PLANE. FIRST FLIGHTS DATE FROM LATE 1950. ▼
WT935
CHUTE CONTAINER ACTUALLY LOCATED ON OPPOSITE SIDE
VX 370
VX 370
▲ AVRO 698 LATEST AND LARGEST BRITISH DELTA— ESTIMATED SPAN OF BOMBER IS 100 FT., LENGTH 120 FT.
DRAG CHUTE CONTAINERS
▲ FAIREY F.D.I. AT PRESENT HAS SMALL STABILIZER ATOP THE RUDDER BUT THIS IS THE INTENDED FINAL FORM
DOUGLAS XF4D SKYRAY ▲ STILL IN THE RESEARCH STAGE, THIS IS ONE OF THE MORE ADVANCED U.S. TYPES AND IS PROBABLY ONE OF THE FASTEST YET BUILT
6682
DOUGLAS ROLFE
▲ CONVAIR XF-92A ALLISON J-33A-29 ENGINE WITH AFTERBURNER. ORIGINALLY KNOWN AS MODEL 7002 THIS WAS FIRST U.S. JET POWERED DELTA WING PLANE (1948)—IS NOW IN FINAL TEST STAGE
NOTE CURIOUSLY HIGH TAIL GROUP
▲ SAAB 210 DRAKEN WITH AN OVERALL SPAN OF LESS THAN 17 FEET THIS SWEDISH RESEARCH PLANE IS WORLD'S SMALLEST DELTA
GLOSTER GA.5 JAVELIN TWIN ARM- ▲ STRONG SIDDELEY SAPPHIRE TURBOJET ENG. BRITAIN'S NEW ALL WEATHER FIGHTER AND FIRST OPERATIONAL DELTA IN THE WORLD
REMOVABLE TIPS
SLOT
TEMPORARY STABILIZER
AVRO
BOLTON PAUL
CONVAIR
DOUGLAS
FAIREY
S.A.A.B.

II. He, Lippisch, was convinced that the delta wing was essential to meet and solve supersonic-flight problems.

Since the war there has been a serious movement toward the delta wing configuration and more recently many varying types have been built for research purposes—both here and abroad. At present the British have a slight edge in this field with three or four models in the advanced research stage and one, the Gloster G.A. 5, in the operational stage. They have also just unwrapped a king-size delta wing bomber—the Avro 698—which is probably in the advanced research stage and should soon be in operation.

Our own two major delta wing contenders have now reached the advanced research stage and may become operational in 1953.

the Corsair's first MiG kill

Even though it was jet versus prop this Marine pilot stood a better chance of living by attacking the Red's vaunted fighter

By CAPT. JESSE G. FOLMAR, USMC (as told to JACK LEWIS)

■ The Communist MiG jet fighter was diving toward the earth, black smoke streaming out in a cone-like mass as I threw my Vought Corsair over on one wing, watching the enemy pilot's figure.

As the tight bundle of humanity, ejected from the cockpit, shot upward from the burning plane, it resembled a grey ball of smoke. At the peak of his ejection, the man's parachute opened and he started dropping gently toward the earth. Suddenly the grey smoke burst into a flame that encased the pilot's body and he struggled at the parachute's end.

My twenty-millimeter cannon must have opened a fuel tank and sprayed him with the fuel, I decided.

"Congratulations. You're the first American to shoot down a MiG with a prop-driven plane!"

It was my wingman, Willie Daniels, shouting into my radio headset. I was still watching that Red pilot, though, his clothing engulfed in flames as he neared the water. Even though he had tried to shoot me down, I felt a certain compassion. It was a hard way to go.

As he struck the salt water of the Yellow Sea, the flames were snuffed out.

"More MiG's!" Daniels warned through the radio headphones. I jerked my head up, staring at the sky above me. "Four more," Willie radioed.

"Break left, down!" I shouted into my own microphone. I jerked the Corsair over on its wingtip again. I saw from the corner of my eye something black and fast moving in. Red tracers started to go past my nose.

A sharp, jarring explosion almost ripped the controls out of my hands. The entire aircraft shuddered. Almost four feet of my left wing was gone. My left aileron had been ripped away by the shell from the enemy jet.

I barked the standard distress signal into the lip mike which hung close to my mouth and started to unfasten the safety harness which held me in the cockpit.

"I'm bailing out!" I warned, as I released the plastic canopy that protected the cockpit. It ripped away into the sky and I struggled up, fighting the hard wind that suddenly whipped about me, trying to force me back into the pilot's seat. The crash helmet was jerked off my head by its force and the lip microphone dragged across my face, stinging the skin.

Another black MiG was coming in toward me as I tumbled over the side of my crazily falling plane. I heard the sharp tattoo of cannon fire as I tumbled over and over into space, the air dragging at my body.

"One!" I was counting aloud, but I couldn't hear. The rush of air was driving the words back into my mouth. "Two! . . . Three!"

I jerked the D-ring on the parachute harness, feeling a return jerk as the pilot chute ripped free. Then, I was brought up short as the larger chute started to open. I glanced up, watching. The white nylon seemed to unfold over my head with the slowness of a night-blooming flower.

Crack!

The sound was near my ear. Then there was another sharp report and the roar of an engine. Another of the enemy jets was diving at me, nose cannon blazing. I watched, fear choking me as the plane dived past me, then started to pull up.

The pilot was trying to strafe me as I dangled helplessly at the end of the heavy network of nylon shroud lines.

The story doesn't start there, though; it begins earlier . . . earlier that same morning below the broad decks of the aircraft carrier *USS Sicily*. I was lying down going through the pile of letters that had just been flown aboard in an old World War II-vintage torpedo bomber. I had sorted them out according to dated postmarks and was opening them one at a time.

". . . It's a little difficult to realize that your latest daughter is already a month old," my wife had written. "She'll be a big girl by the time you get home . . ."

Copyright 1952 United Aircraft Corp. Presented through courtesy of "The Bee-Hive."

"Pilots report to the briefing room! Report on the double!" The words were thick coming over the ship's intercom system, but they couldn't be ignored. I sat up, stuffing the letter into the pocket of my flight suit and picked up my gloves. It was the order I had been awaiting.

The briefing was fast but thorough. There would be four of us. Two of the pilots would be on a combat air patrol in the vicinity, while Lieutenant Willie Daniels and I would take in bombs to blast away at the concentration of 300 North Korean troops that had been reported on the west coast of the enemy-held portion of Korea.

"One last word," the briefing officer reminded, as he finished his monologue. "Remember that if you're jumped by MiGs, drop your ordnance and extra fuel tanks and turn into them. You might stand a better chance by attacking than trying to run."

There was the babble of voices through the room as the briefing broke up and men started up for the flattop's deck. I lingered for a moment, staring at the map. I had been jumped once by a MiG and had gotten away. He might have finished me, had he not been anxious to get back to the North and had flown away after only a few jabs in my direction with his cannon fire. What our boy had said about attacking instead of running, though, made some sense. A propeller-driven plane is just no match for a jet fighter as advanced as the MiG.

Some of the bent-winged Corsairs of the Marine "Checkerboard" squadron already were warming up as we came up on the deck. I shaded my eyes against the glare and moved along the line to where my plane waited. Daniels went on to his plane, as I circled the ship, checking it and the ordnance. It's a ritual. Over North Korea is no place to suddenly discover that you made a mistake or were careless before take-off.

I was on the catapult waiting to be shot off the deck into space, when I remembered the letter from my wife. I had only been in Korea for six months. It was going to be a few more months before I would get to see that daughter of mine. My head jerked back against the rear of the cockpit as the signalman waved his hand forward and the catapult shot me down the deck with the force of a sling-shot. I pulled back on the yoke, lifting the Corsair into the air. It was almost second nature. With fourteen years in the Marine Corps, I had been flying the gull-winged craft in two wars. I was still thinking about the letter. A combat patrol and an attack on enemy troops under the threat of MiG fighters was no time to be inspecting one's personal mail. I leaned forward, however, feeling in the leg of my flight suit to find that it was still tucked among the maps there.

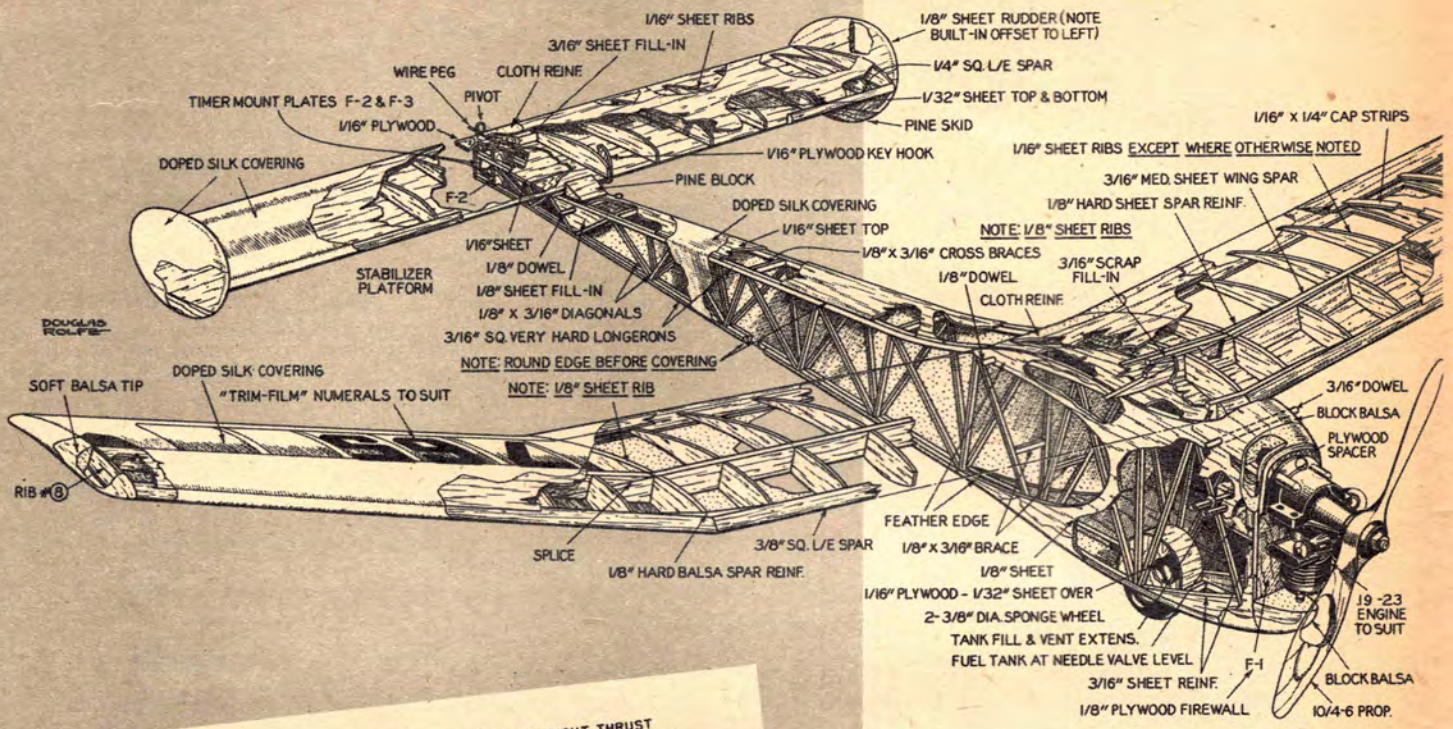
Down below, the carrier was a long splinter on the surface of the Yellow Sea, with black dots that were more Corsairs being shot off the end of the carrier deck.

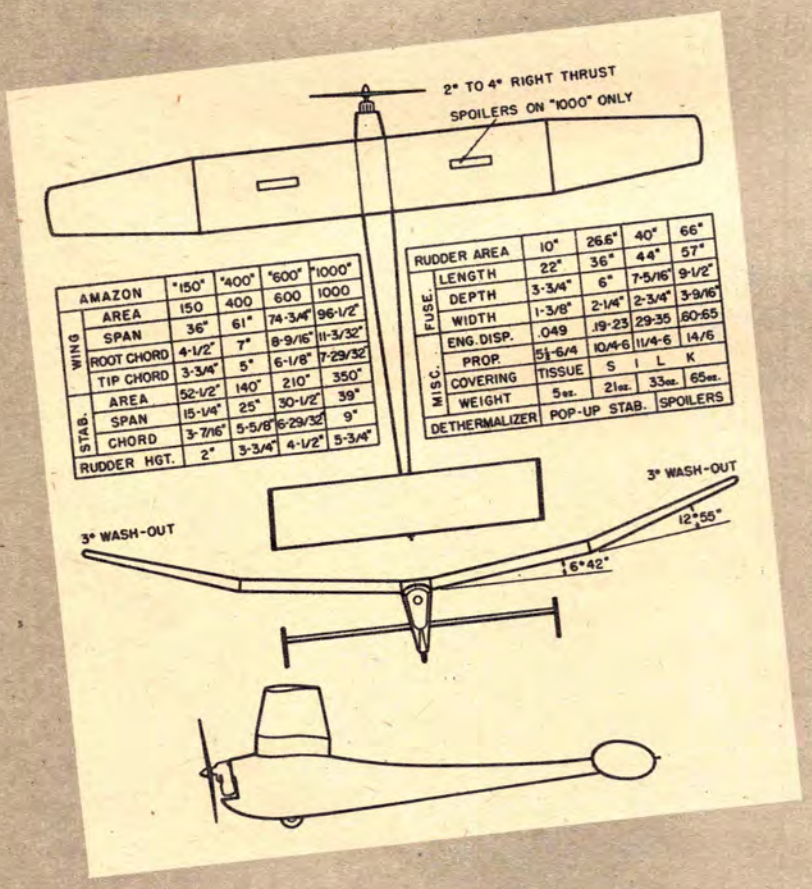
As Lieutenant Daniels joined up on my wing, I swung the plane northward. Below, islands dotted the area off the coast. Most of them were friendly, I knew.

The water was nothing but a blue glass surface like one of those tinted mirrors that some people use on their coffee tables at home. Off to the east, the shoreline was hidden by the thin line of haze that hangs over the Korean countryside after the initial smooth calm of the morning. Over there, in that hazy blanket, was the enemy.

It had been the same kind of day only a few afternoons before, though, when I had been jumped by the enemy MiGs and had dived for the sea in an effort to shake them off. I glanced skyward now, looking for enemy jets.

There were supposed to be 300 troops, but we found none. The valley where they had been (*Continued on page* 56)





		"150"	"400"	"600"	"1000"
WING	AMAZON				
	AREA	150	400	600	1000
	SPAN	36"	61"	74-3/4"	96-1/2"
	ROOT CHORD	4-1/2"	7"	8-9/16"	11-3/32"
	TIP CHORD	3-3/4"	5"	6-1/8"	7-29/32"
STAB.	AREA	52-1/2"	140"	210"	350"
	SPAN	15-1/4"	25"	30-1/2"	39"
	CHORD	3-7/16"	5-5/8"	6-29/32"	9"
RUDDER HGT.		2"	3-3/4"	4-1/2"	5-3/4"

RUDDER AREA		10"	26.6"	40"	66"
FUSE.	LENGTH	22"	36"	44"	57"
	DEPTH	3-3/4"	6"	7-5/16"	9-1/2"
	WIDTH	1-3/8"	2-1/4"	2-3/4"	3-9/16"
MISC.	ENG. DISP.	.049	.19-.23	29-35	60-65
	PROP.	5-6/4	10/4-6	11/4-6	14/6
	COVERING	TISSUE	S I L K		
	WEIGHT	5oz.	21oz.	33oz.	65oz.
DETHERMALIZER		POP-UP STAB.		SPOILERS	

■ *Sandra Hill, air-model designer extraordinary, is speaking:* Most girls learn to bake an apple pie passably well and have little trouble in snagging the man of their dreams, but with model builders it's different. After the first few dates with my husband-to-be I had to bone up on aerodynamics to show him what a good companion I could be.

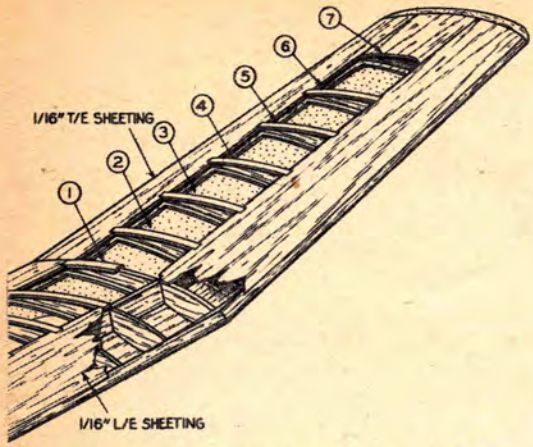
After we were married and I had tagged along to a few dozen contests, I marveled at the dogged patience of the number of modelers who could pick up the shattered remains of a brand-new ship, patch it to fly again, only to have the same faulty and disastrous flight characteristics. With the few aerodynamic principles I understood, I felt that I could design a model with more dependable performance.

This turned out to be more research than I had expected, but I finally worked out on paper a ship which theoretically had stability superior to pylon-type designs and high performance. Every detail in the *Amazon* was carefully planned, and any feature which could not be listed as "functional" was discarded.

The efficient high aspect ratio (9.24) wing has a sheeted leading edge, full-

SANDRA and STAN HILL'S

Amazon "400"



Jack Smith, left, winner of the Class B open division free flight competition at the '52 Nationals, Dr. Stan Hill and Mrs. Hill shown with the four different "Amazons." From the left these models are the "600", "150", "1000" and the "400". Mrs. Hill is responsible for the design of the airplane which had both its test flight and contest debut at '52 Nats. There Bill Cook took 7th in C Sr. with a "600."

depth box spar, and cap strips for warp-resistance and strength. The full-sheeted tail is easily constructed, warp proof, and twin rudders out of the prop wash make for less "touchiness" under power and high efficiency resulting from an effective increase in stabilizer aspect ratio.

The triangular fuselage construction allows maximum rigidity for weight of materials. A single belly wheel cuts out conventional landing gear weight and drag, R.O.G.'s easily, and will never cause the ship to nose over. The engine was inverted to allow a high thrust line near the center of drag to lessen nosing-up moment and the inefficient compensatory effects which go with it. The deep slab sides enable control of C.L.A. placement for stability, and far better visibility. (The longer the ship is seen, the longer that stop watch runs!)

First flights confirmed my choice of high C.G.-low C.L.A. approach to spiral stability. No *Amazon* made to date has shown less than a 1 to 10 power to glide ratio in dead air, and the "1000" has been hitting a surprising 1 to 18 fairly consistently.

Stan Hill on construction: Lay out and assemble the two fuselage sides one on top of the other. When dry remove the two sides from the plan as one and block-sand to identical outline before separating. Bevel the lower longerons, glue and clamp with clothespins. While this is drying, install cross members at the top and the forward part of the bottom of the fuselage. Recheck the bottom for proper alignment before dry, as it cannot be warped into shape later. Install engine on firewall and give the nuts several heavy coats of fuel-proof glue. This same glue should be used for the entire forward quarter of the fuselage.

Install firewall, fuel tank, wheel well, and dethermalizer timer mounting plates. Glue on wing mounts and side planking and when these are dry, plank the top, checking alignment carefully as this sheet "locks" the fuselage into a rigid structure when dry. Install stabilizer platform. After sanding smooth (#½ closed coat garnet paper followed by #4/0), dope on the cloth (linen) firewall reinforcement.

The wing is the only part of the *Amazon* that departs from usual structural practice and *must* be done in the following sequence:

1. Pre-glue joining surfaces of the spar and when dry assemble the *complete* spar on the spar plan. When dry remove from the plan, glue and clamp reinforcement plates, and dry for twenty-four hours. Bevel as shown on plan.

2. Block up T.E., spar and L.E. from plan as indicated and glue in rib halves on either side of spar. (Ribs should previously be stacked and sanded to identical outline.) Before removing from the plan glue on the upper part of the T.E. It is best to assemble the inboard panels first and tips last.

3. Complete the center section and bevel the entire L.E. preparatory to sheeting. Sheet the section from spar to leading edge doing the *bottom* first, one panel at a time, being sure to glue it to all ribs as this forms a rigid cellular structure. Note: Upper surface sheeting should be medium on inboard panels and medium soft on outboard and lower inboard panels. Lower outboard panels should be soft.

4. Weight wing down on a flat board and glue on upper surface planking, allowing to remain under weights until dry. When sheeting the upper surface of the tips block up the end of the trailing edge ¼ inch for washout.

5. Complete remaining planking and cap stripping and sand in usual manner preparatory to covering. Dope on linen T.E. reinforcement at the center section.

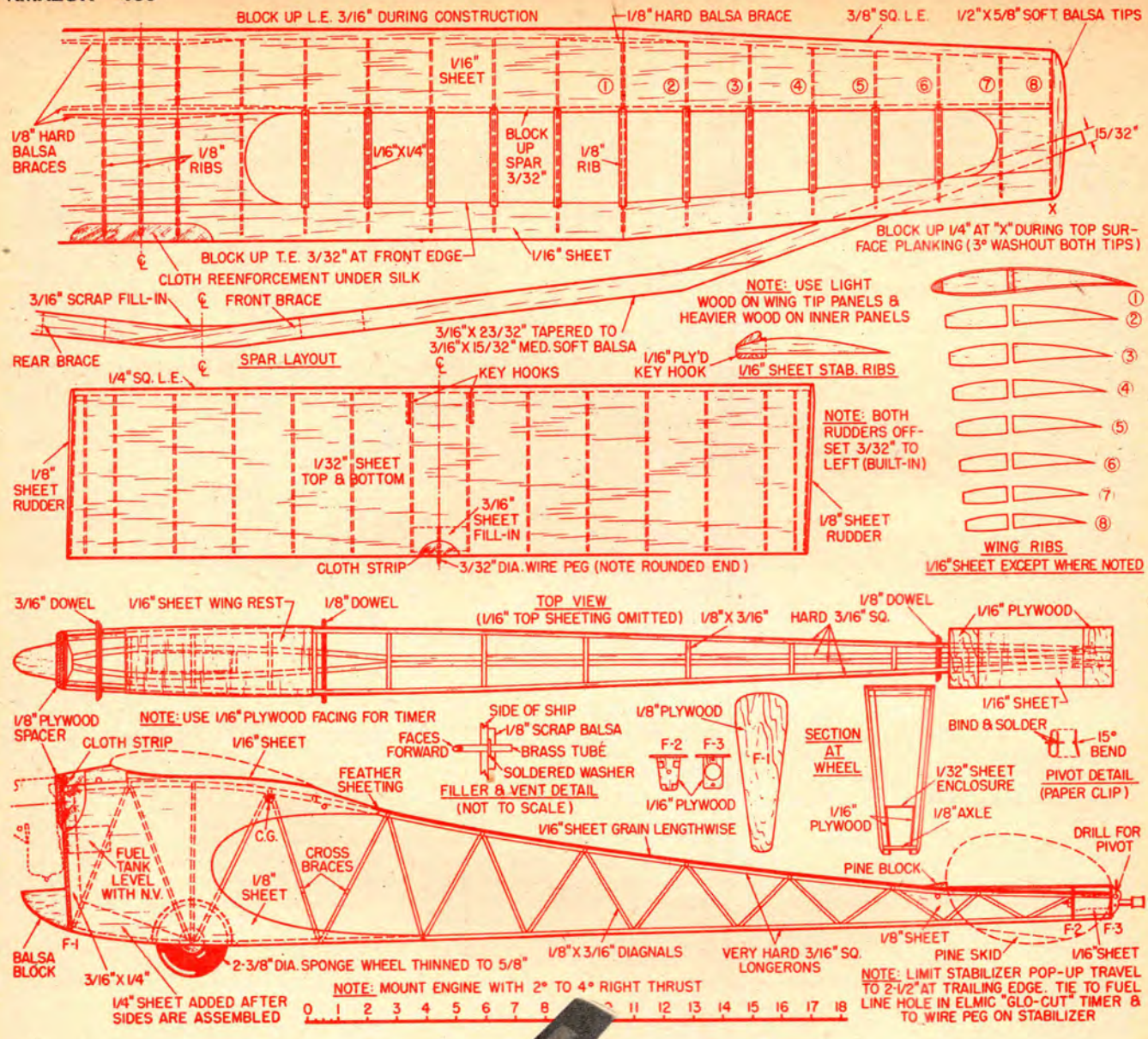
Lay out 1/32" sheet for stabilizer on plan and glue L.E., ribs, and center reinforcement block to it. Allow to dry and then cover upper surface with 1/32" sheet before removal from plan, gluing to all ribs as in the wing. Cut sheeting and insert plywood key-hooks.

Cut rudders from medium soft ⅛" sheet, glue and sand to streamline shape.

Finish all planked areas with one coat of sanding sealer or dope to prevent lumpy swelling of the wood caused by the wet silk covering. The ship is *far* stronger with silk covering. The original "400" built in '49 has never needed a patch! For inexpensive dyed covering try any 5 and 10¢ store for yard-square silk scarves. After covering apply two coats of clear nitrate dope and follow with a very light sanding, using #400 paper. Glue on the wing keys before further doping. This is *essential* for consistent flying in any contest ship. Put off keying the rear part of the stabilizer until test flights have indicated the exact setting. Apply two coats of thinned acetate butyrate dope; clear butyrate for

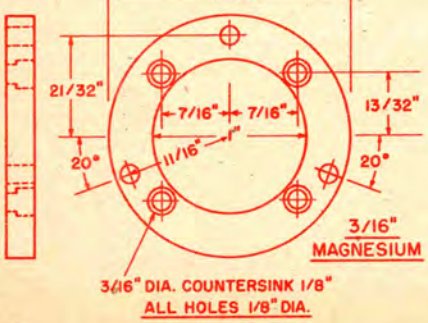
Outstanding new free flight design by California gal took top honors at Nats

AMAZON "400"



Full-size working drawings for the "400" version of the Amazon can be obtained from the Air Trails Plan Dept. Check plan listing in back.

RADIAL ENGINE MOUNT ADAPTOR FOR K&B J9
(SPACER FIREWALL NOT USED WITH THIS)



the wings to allow the color of the silk to "glow" as sunlight passes through, and pigmented orange or vermilion butyrate for the fuselage and rudders. This combination gives maximum contrast with all possible backgrounds for very high visibility and needs no fuel proofer of any kind. A little wax will heighten flash visibility and makes the finish even more fuel proof.

Jack Smith on flying: Adjust for a fast glide with a *very* slight left turn by shifting stabilizer. Test fly with low power runs of about seven to ten seconds until a very wide *left* climb circle and fairly tight *left* glide turn are obtained. Make all turn adjustments with rudder and thrust changes rather than drag tabs, stabilizer or wing cocking. The climb will tighten under high power to a loose vertical barrel roll. When peak adjustment is attained key the rear end of the stabilizer. A 9/6 prop is minimum for good performance, with a 10/5 or 10/6 wide-blade prop being the best.

Every *Amazon* built by local modelers, whether expert or not, has given excellent, dependable performance. It isn't the slightest bit tricky to handle.

We would appreciate hearing from any builders concerning problems or contest performance of your *Amazon*. Write to S. D. Hill, c/o Air Trails.

DESIGN DATA

Wing. Area: 400 sq. in. Span: 61". Root chord: 7". Tip chord: 5". Av. chord: 6.6." Aspect ratio: 9.24:1. Airfoil: N.A.C.A. 4612. Incidence angle: +7 deg. Dihedral angles: 6 deg. 42 min. inboard, 12 deg. 55 min. outboard. Washout: 3 deg.

Stabilizer. Area (35% of wing): 140 sq. in. Span: 25". Chord: 5.625". Airfoil: 10% Flat Bottom. Incidence angle: +3 deg.

(*Continued on page 56*)

De Havilland Chipmunk

SUB-MINIATURE SCALE MODELS

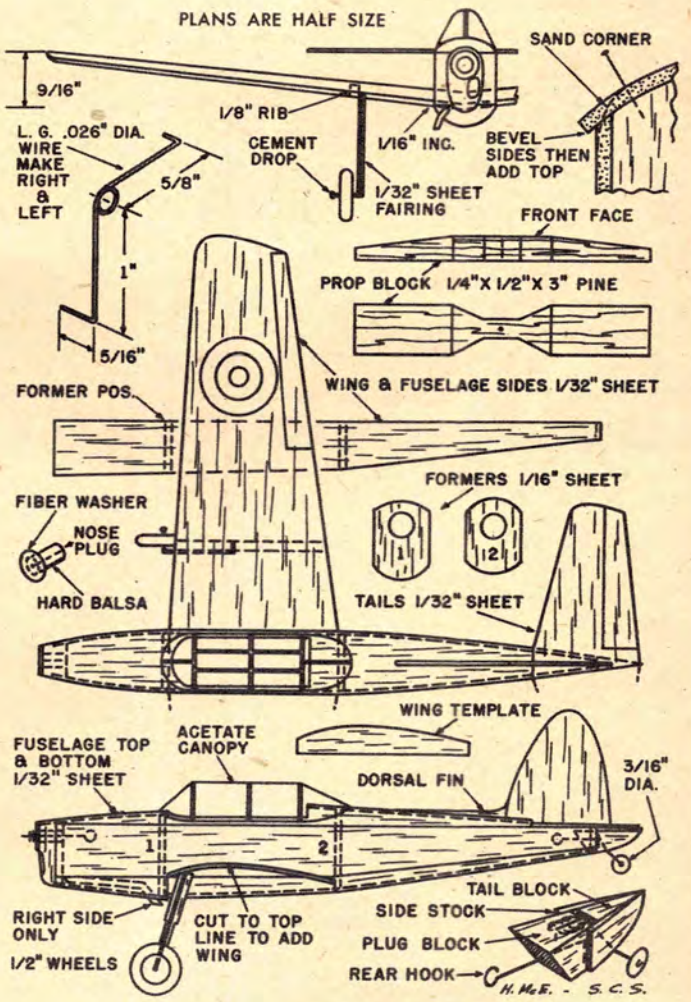
By HOWARD G. McENTEE

■ It has always been one of our big thrills in modeling to select some big plane that has good scale model possibilities, then reduce it in size as much as we dared and see if the resulting ship could be made to fly satisfactorily. The lowest practical minimum turned out to be around 8". Several of these are shown here.

Even more so than in larger scale planes, you have to pick your prototype with the greatest care. The idea, of course, is to make a flying scale job with as few departures as possible from the original. We'll concede that it is necessary to enlarge the tail surfaces and the prop. The latter change means that in most cases the landing gear must be made longer to allow clearance for the longer blade. The wing airfoil section is almost always changed, but wing and tail outlines are rigidly adhered to.

In fact, *all* outlines are adhered to as much as possible. Thus, when someone sees the model there should not be the slightest doubt in their minds as to what the little baby represents.

These tiny planes are naturals for all-balsa technique and, in fact, it is doubtful if a model of this size could be made that would stand any sort of handling and flying if it were constructed on the stick and paper system. There would be numerous covering and warp problems, too. The balsa models are really tough and can take a beating; furthermore, (*Continued on page* 63)



Robert W. Elliott, 25, Atlanta, Ga., shown with the Arthur Godfrey Perpetual Trophy which he won for top performance in scale and stunt competition in 1950 . . . in '51 organized and captained the Veco Stunt Flyers which flew at the Nationals . . . Bob's original stunt designs preceding Black Tiger include the "Cobra" and the "Snapdragon," both widely duplicated in South . . . Pres., East Point 8-Ball Flyers.

This stunt model has been taking Dixie by storm! Bob's many wins with black beauty can be duplicated by you

the Black Tiger

By ROBERT W. ELLIOTT

■ The *Black Tiger* is the result of ideas and inspiration from my trip to the '51 Nationals in Dallas, Texas.

For two seasons I had done very well in competition throughout the Southeast with a smaller ship powered with a Veco .29, but placed third in Dallas. I realized that any stunt man who is out to do his best must have an airplane to match his competition, and took note of the trend of stunt ships flown by the winners. George Aldrich and Don Still were most helpful. I found them not only fine stunters but fine fellows personally. George advised me to use a larger ship with smoother flying characteristics.

His suggestion started my search for just such a ship. It would have to be one with clean lines, realistic proportions. It would have to have that "second look" appeal!

On my drawing board the Tiger took shape. Simple in design, simple in construction, box-type fuselage that a novice as well as an expert would have little trouble building into a good-looking, smooth-flying airplane.

During the winter of '51-'52 construction started on this semi-scale stunt ship resembling the P-40 Warhawk. In May '52 it was completed. During the season that followed it was given full appearance points in all meets in the Southeast. A sister ship built and flown by Harris Grimes (1951 National Junior Champ) in the '52 Plymouth Internationals in Detroit also gained full appearance points.

The *Black Tiger* has an overall length of 30 inches, weighs approximately 32 ounces and has a wingspan of 45½ inches with approximately 448 square inches of wing area, including flaps.

Start the fuselage assembly by gluing the 1/16" plywood doublers to the ⅛" sheet sides in their correct positions. Motor mounts are then glued in place on the ⅛" sheet sides, *inside* the slot of the 1/16" plywood. The firewall and landing gear are glued into position with the gear attached. The sheet sides are then glued at the rear to a ⅛"x3/16"x 1½" tail piece and bulkhead assembled. Glue tailwheel into position and plank bottom with ⅛" sheet up to the landing gear. Place tank in position and add 1/16" sheet baffle. The remainder of the bottom can now be planked with 1/16" sheet balsa.

Wing construction is fairly simple. The inside wing is 1¼" longer than the outer panel with 2½" rib spacing. (1/16" ribs are used with 3/16" cap strips.) Note that the rib nearest the bellcrank on the inside panel is made from ⅛" sheet and note also that the wing spars are *not* spliced in the center. Splicing is alternated to distribute equally the weak spots. The leading and trailing edges are made from ¼" square. The remaining spars are of 3/16" square. Splice all spars and leading edges and mark for rib spacing. Build wing flat on work table.

Glue ribs into position on one of the 3/16" spars. Add the other spar and check alignment of ribs. Glue leading and trailing edges into position, also checking alignment. The trailing edge is then beveled and the 1"x1/16" sheet balsa is glued into position. Glue bellcrank floor into position and add bellcrank and lead-out wires. Plank leading edge and center section. Glue wing tips into position and sand wing until smooth. (Note: The flap horn must be placed into the fuselage *before* wing is inserted.) The flaps are of solid ¼" sheet, tapered and sanded. These are attached *after* the installation of the wing.

The rudder, stabilizer and elevators are made from ⅜" sheet balsa. The rud-

An important part of any stunt model today is neat workmanship and sleek appearance. Read how Elliott achieves his fine finish.

der and elevator are left solid. The stabilizer is sanded to the correct airfoil and cut as shown. 1/16" ribs are added and sanded to shape. The elevator is tapered in the correct manner, sanded well, and attached to the stabilizer with cloth hinges of aircraft tape. The rudder is sanded into a lifting section with the camber on the *inside* of the circle. The complete rudder and fin unit can also be offset two or three degrees to keep lines taut at all times.

After wing is installed, add stabilizer, noting that the stabilizer attaches to a ¼" tail raiser block. Check stabilizer for correct alignment with the thrust line. Hook up controls in the correct holes on the bellcrank and control horns.

The turtle back is now planked up to the rear of the cockpit. The complete outline of the rear windows is cut out. From ½" sheet carve the inside window walls to a concave shape. Glue to these walls pieces of celluloid which will cover the complete outline of the rear windows. (Note: The window walls must be painted before they are placed in position.) A temporary hole must be cut into the rear former of the cockpit for easy installation of the walls. Window frames are added *after* the walls are installed. The engine nut plates are attached and covered by a ¼" spinner block. The top deck is of ½" sheet sanded to the correct shape. Use a 1¾" Froom needlenose spinner with the point rounded off.

The cowl is carved from solid block or built up from solid sheets and hollowed. It has a 1/32" plywood rear and 1/16" plywood front added for strength.

The wing fillets are built from a ⅛" sheet former and covered with 1/32" sheet balsa. (Note: The wing fillets are NOT in line with the thrust line.) They follow closely the camber line of the top of the wing, giving a more realistic effect without any noticeable flight changes. Bend 1/16" diameter piano wire to shape for front cockpit frame. The outside cockpit framework is cut from .020 sheet aluminum and bent to fit over cockpit.

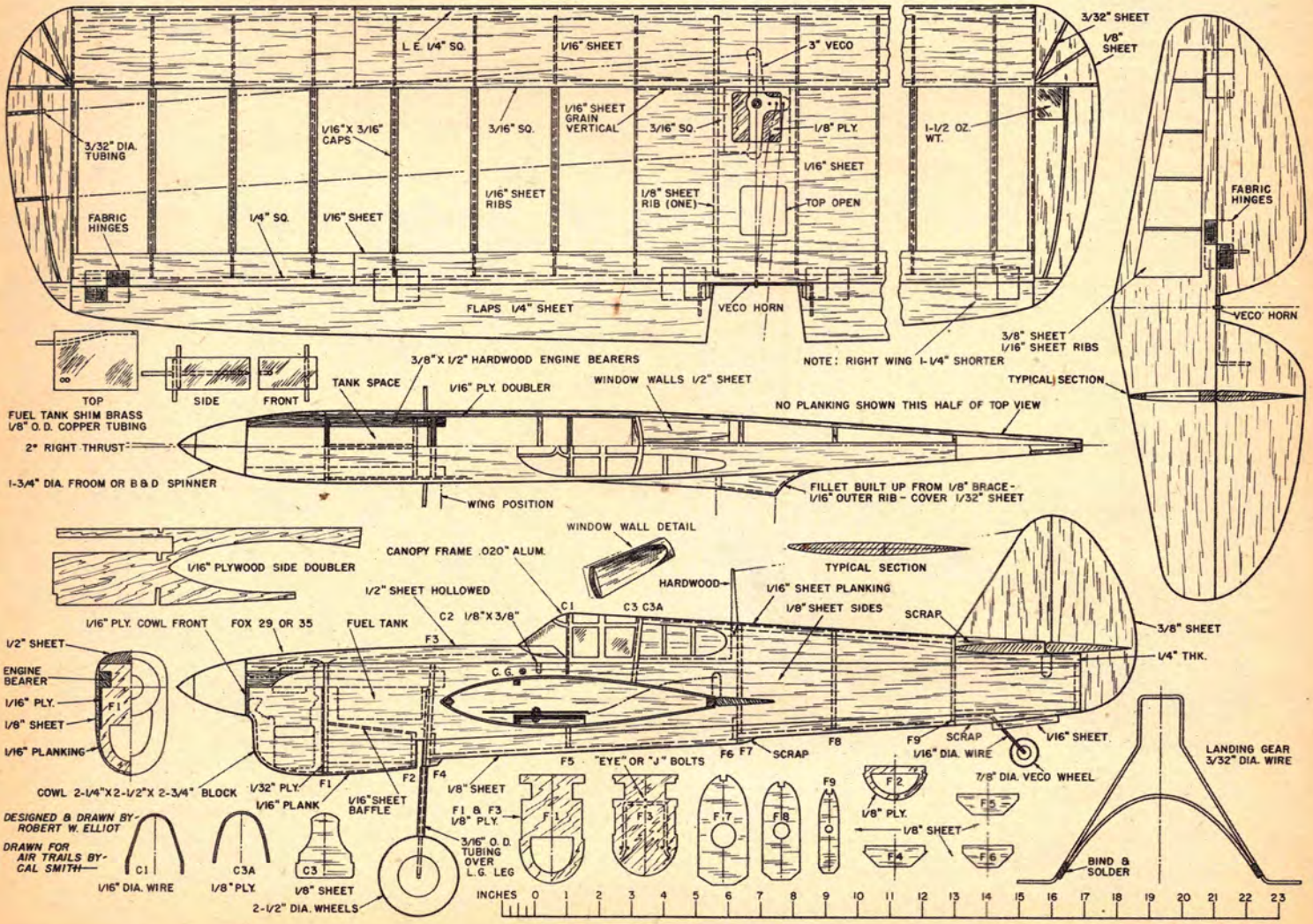
Let's put a good finish on your ship. Whatever type of dope you decide to use, make it the same from the wood to the final finish, and make sure the dope is *thin enough!* Thin dope reduces the brush marks to a minimum.

Give the entire model *two* coats of clear dope. Let dry thoroughly and sand with #320 sandpaper. Cover the wings and tail surface with medium grade paper. Paint on 4 to 6 coats of clear dope. Sand lightly with #400 sandpaper, after each coat. Now cover remainder of model with light paper and apply two or three coats of clear dope.

Let dry and sand lightly.

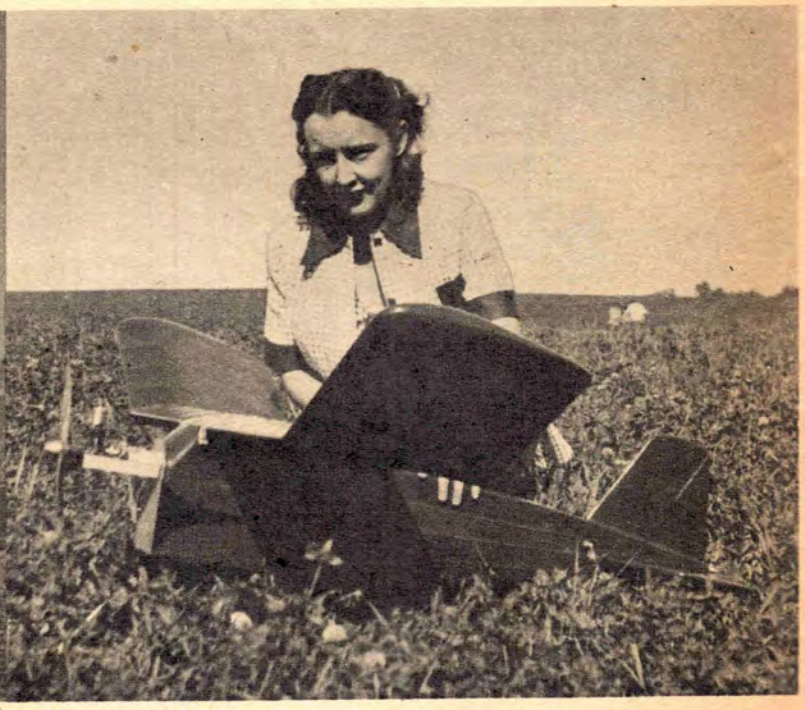
For sanding sealer I used a 50-50 mixture of Johnson's Baby Powder and clear dope mixed well with two or three drops of castor oil. After mixing well, apply four coats of this sanding sealer, allowing time for each coat to dry thoroughly, then sand with #320 sandpaper. If grain of wood is still visible, apply 2 more coats, let dry and sand again. Now apply 4 to 5 *thin* coats of clear dope, sanding lightly between coats with #400 sandpaper. If possible spray the final finish. (*Cont. on page* 60)

Full-size working drawings for building the Black Tiger are available from Air Trails' Plan Department

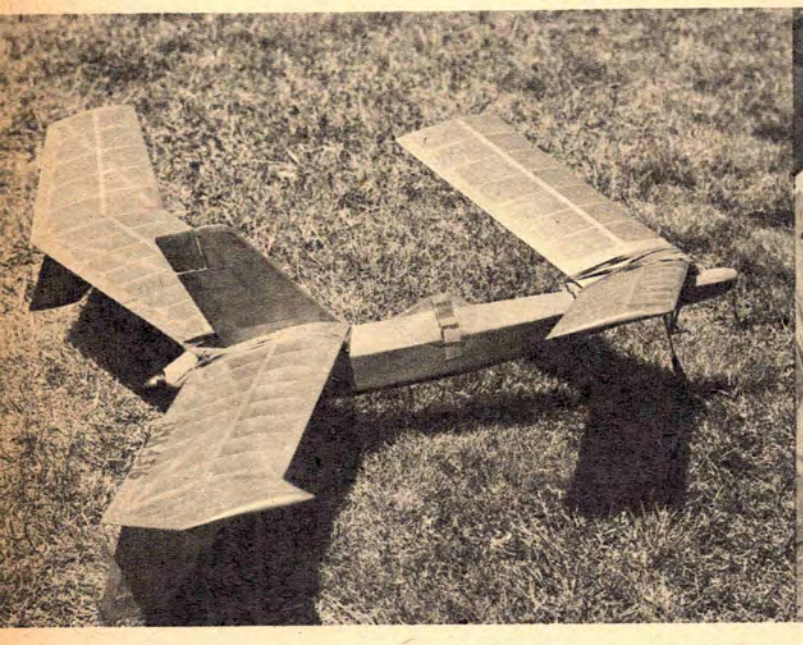


model

Further evidence that model aviation produces aviation's best personnel: Speed Wilson, Convair test pilot, is a real model fan. Am. Ace has Cub .074; Cessna, a Cub .049; bipe, Baby Spit.



Lady radio controller from Des Moines! Lois Johnson built this job herself, installed radio, does all the flying. Design is by hubby who advocates "box" fuselages for simplicity and strength. Plane flies fine.



Extremely successful canard flown by Bruno Markiewicz of Detroit in the 1952 Mirror Model Flying Fair. A diesel (compression ignition) supplies power for PAA-Loaders. Note 3 rudders.

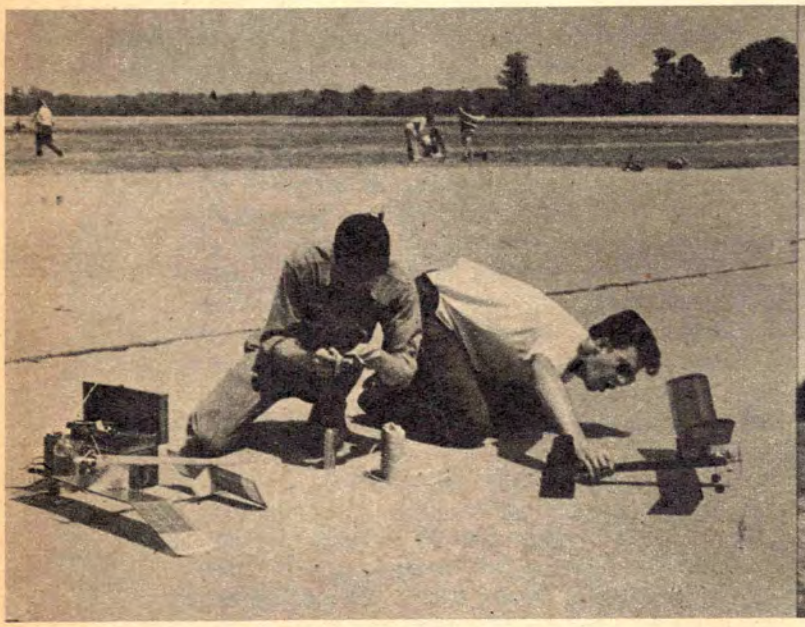
Real admiring crowd! These are youngsters from the San Diego, Calif., Mission giving George Barker's P-38 control line the once-over. Power is by two Torpedo .29's; model's all-up flying weight is 3.5 pounds.

MODEL BUILDING AND PHOTOGRAPHY GO HAND IN HAND, RIGHT?

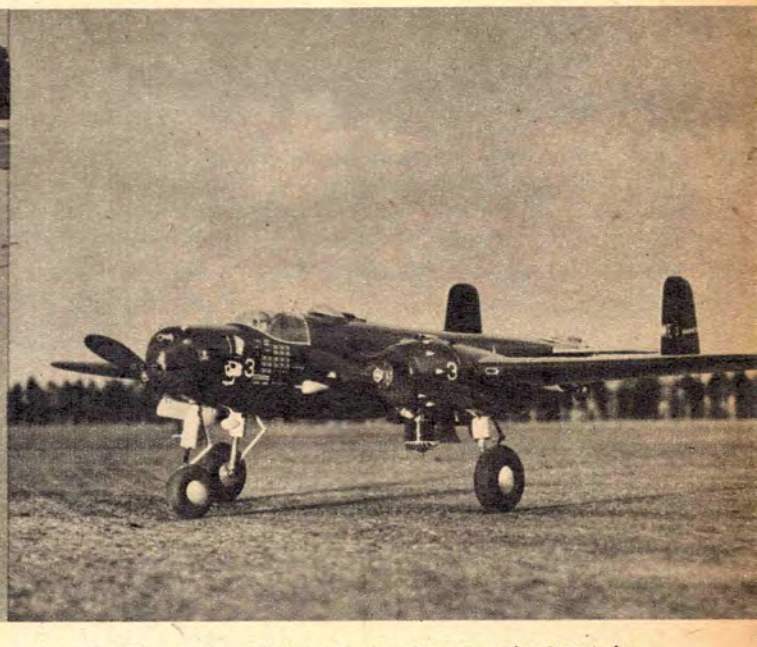
matters

Nifty realistic control line scale pusher by Larry Kosby, Uniondale, N. J. It's Bill Stout's airplane of the late '30's. Ohlsson .60 with ignition. Weighs 3.5 pounds, has a wingspan of 36 inches. It's neat!

Ah, for mechanics like this! Pat Blauer's 19, lives in Hutchison, Kans., helps b.f. Sam Snyder. Sam's Dyna-Jet won beauty event at Ringmasters' Denver meet. We'd have given cup to Pat!

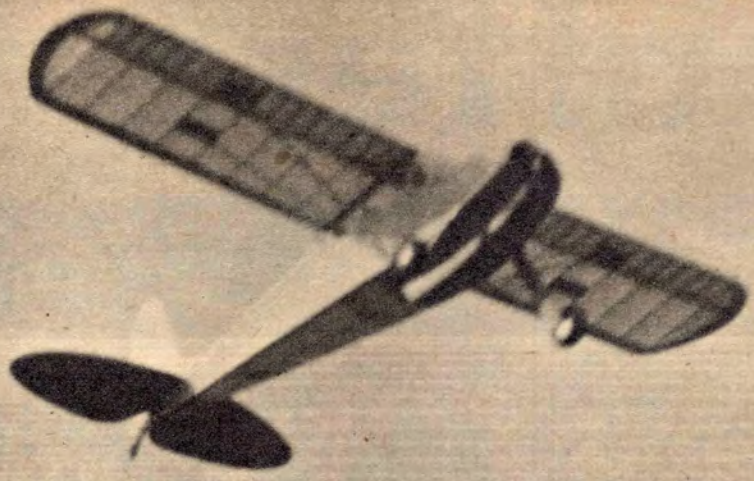


"What's the matter with that darn fuel tank?" seems to be the comment of James P. Kohls at the National Exchange Clubs Michigan State meet. Kohls of Detroit won 1st in A/2 Jr.-Sp. PAA-Load, 7:20.2.



Some finish! And some mighty nice detailing, too. This B-25 is by John Pacey, Brooklyn, and is powered by two Ohlsson .23's glow plugged. Weighs 3.25 lbs., performs well on either engine.

HINT: "AT" PAYS $5 FOR EXCLUSIVE SHOTS USED HERE, SO . . .



THE helioplane

By HENRY STRUCK

Here's the free flight scale version with an .039 engine built by Gordon Dorr of Deep River, Conn. That's Gordon, below, launching it.

Hank, the renowned Connecticut craftsman and former National Champ, comes up with remarkable Half-A F/F or U/C'er

■ The model was scaled from original three-view drawings obtained through the courtesy of Professor Otto Koppen of M. I. T., the designer of the Helioplane. The configuration of the full-scale ship satisfies so many of the requirements for a good flying model that it almost seems to have been designed for that purpose!

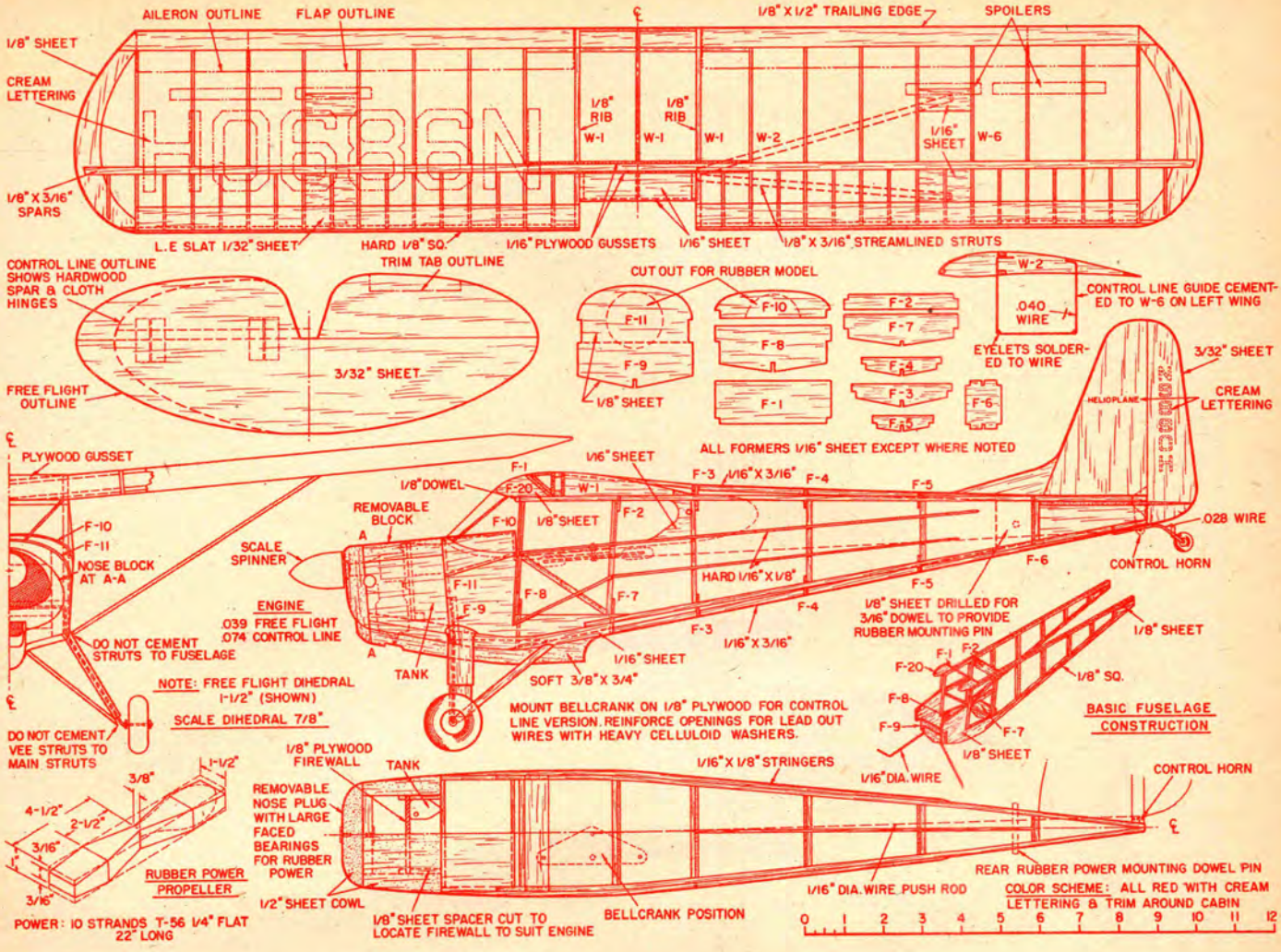
Powered by an .039 Cub the model has turned in many realistic flights even with scale dihedral. The giant 9 ft. propeller of the big ship, driven through a multiple Vee belt at about 1200 rpm, operates at optimum blade efficiency with the engine turning over at its normal speed. This is an ideal feature for rubber-powered flying scale enthusiasts.

Modifications have been indicated on the plans that permit the basic model to be built in three versions, free flight gas, rubber powered, and control line.

Construction is quite conventional and rugged. Assemble the fuselage sides one atop the other and join when dry with cut-out formers of 1/16" sheet. Note the construction at the cabin. The sloping former F-1 allows the wing to slide ahead in a crack-up, as well as faithfully reproducing the contours of the windshield. Use hard balsa for the longerons, spars, leading and trailing edges.

The center airfoil is flat bottomed to rest on the

Full-size working drawings for quick construction of the Helioplane are available from Air Trials Plan Service



fuselage top, while the other sections are undercambered. After assembling the wing panels on the plans, join the spars at the center section with 1/16″ plywood gussets.

For a free flight gas powered model mount a ⅛″ plywood firewall in the nose, blocking it in place with ⅛″ sheet balsa at each side. Use an .020 to .039 cu. in. engine for best results. Fuel-proof thoroughly. Make the upper cowl block removable to permit access to the engine for maintenance.

For a rubber-powered version build up a removable nose plug and fit with bearings of large-face bushings. Cement ⅛″ hard sheet balsa at the rear of the fuselage to receive a 3/16″ dowel to hold the rubber motor. For maximum performance use a folding propeller and about 50% slack in the rubber and a tensioner device to avoid bunching of the knots, with resultant shifting of the C.G.

For a control line flyer install an .049 to .099 engine in the same manner as for free flight. Cement a 3/32″ plywood plate in the cabin and bolt a small bellcrank to it. Cut the horizontal tail to the smaller outline shown and hinge the elevators with cloth strips. Cement a wire line guide to the #6 rib in the left wing.

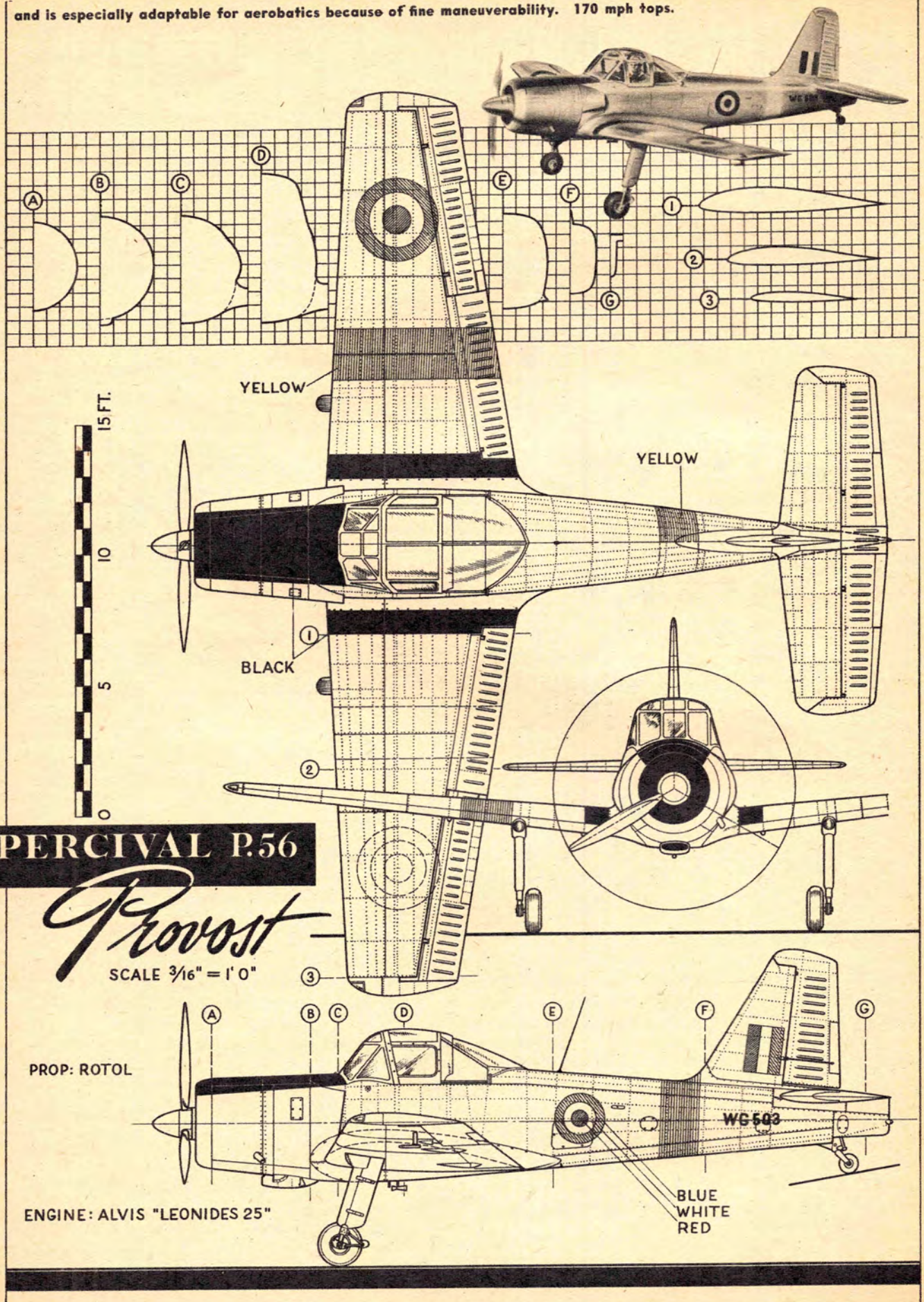
Sand the model thoroughly before covering. Use red gas tissue applied while wet. When dry brush on clear dope plasticized with a few drops of castor oil in each eight ounces to minimize warpage.

Note that the wing and landing gear Vee struts are not cemented to the fuselage or main landing gear struts in order to permit the parts freedom of movement. The wing is held to the fuselage by a couple of rubber bands hooked on the projecting dowels at the cabin.

Balance the model about 2″ from the leading edge for free flight gas power. For rubber power the C.G. may be shifted to 2½″ from the leading edge. Test-glide over tall grass by hand launching to check the setting of the tail. Bend the elevators up slightly to correct diving, or down to correct stalling. Bend the rudder to obtain a slight turn to the left for gas power, or to the right for rubber power. As a control line model the C.G. should be about 1″ from the leading edge. Fly the model on 25 to 35 ft. lines, using the longer lines in calm weather.

The original ship was colored all red with cream lettering and trim. Colored tissue with Trim-Film cut for lettering will produce the lightest job for free flight. A coat of clear fuel proofer should be applied to the entire ship if gas powered. Fuel-proof colored dopes may be used for the control line model.

Percival Provost, British trainer now in production for the RAF, has a side-by-side cockpit and is especially adaptable for aerobatics because of fine maneuverability. 170 mph tops.



PERCIVAL P.56 *Provost*

SCALE 3/16" = 1' 0"

By CARL SNYDER

"Kansas" Carl's mini-size control line is a fine stunt performer and sharp "Sunday" sport flyer

Little Joe

■ This little ship is an invitation to a surprise. I've had more pure fun, and learned more about stunt flying with this baby than with any other C/L job I've ever piloted.

Wing loading has been held low for high maneuverability, and, although the airfoil section used is relalively thin, the ship can turn on the well-known dime with no signs of mushing. The .045 that powered the original gave a rather slow, steady speed in level flight, and plenty of power for any maneuver when fitted with a 6/2 prop, but with a 5.5/3 or 5.25/4 prop, level flight speed was such that the job held its own with most of the Half-A team racers.

Build the wing by spacing ribs on spars, then adding trailing edge, leading edge, and tips, in that order. The notched trailing edge helps to hold things in place while cement dries. Leading edge may be held by pinning diagonally into ribs. Install bellcrank, lead-outs, and about 1½ inches of pushrod before planking and covering wing.

Steam or lightly break the bend in fuselage sides, pin down to top fuselage view, and cement in all bulkheads except firewall. Don't cement rear ends of fuselage sides together yet.

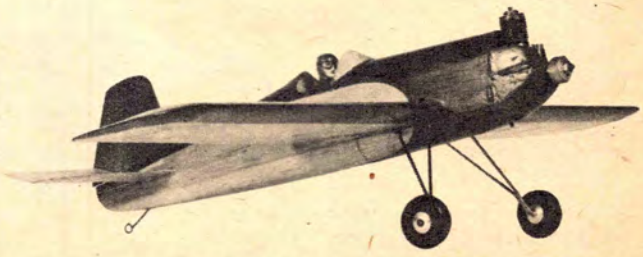
Next add the 1/16" x ⅛" top stringer. Remove from plans when cement is dry. Slide completed wing assembly through slots in fuselage and cement well, especially where leading and trailing edges meet fuselage bulkheads. The complete stabilizer and elevator assembly, with 6½ inches of pushrod, is slipped in slot at rear end of fuselage; spread ends to allow entrance of elevator horn and pushrod. Cement stabilizer to fuselage, and cement rear fuselage ends together. Pin elevators and bellcrank in neutral position and lap the two loose ends of the pushrod together, soldering lightly as shown on plans. Notch bulkheads as necessary to allow free movement of all control parts.

Fuel tank installation, firewall, and top fuselage planking come in that order. Cement motor mounting nuts in place before mounting firewall. Add fin, cut out cockpit, and, finally, place hollowed belly-block with landing gear attached, using plenty of cement. Finish off by adding cowl sides, windshield, headrest, and tail skid.

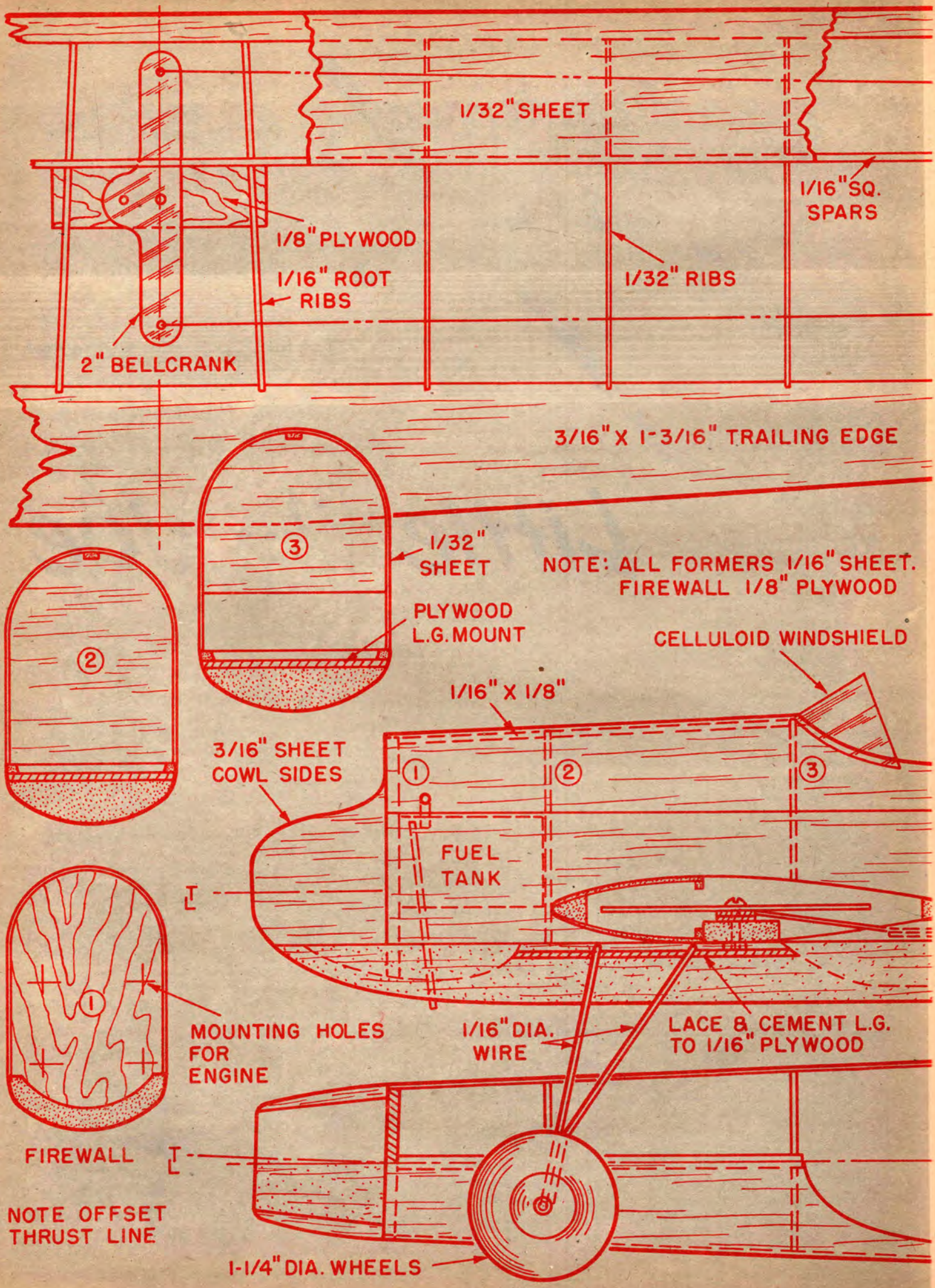
Entire ship was covered with tissue in order to secure a good finish with a minimum of dope; two coats of straight clear Sta and one coat of red trim were used on the original. Go easy on the dope to save weight; use just enough to fuel-proof ship.

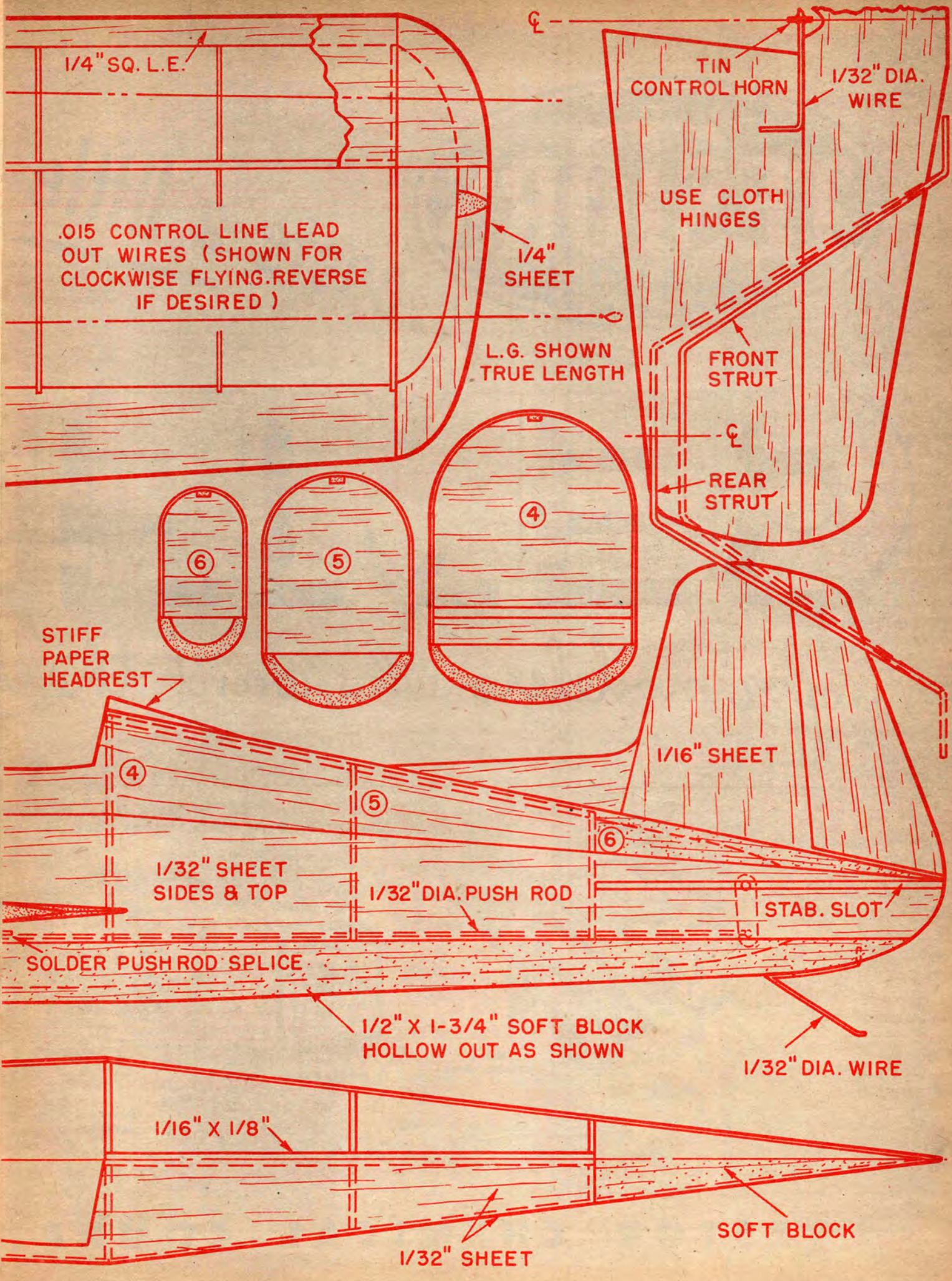
The C.G. should be about one fourth chord behind leading edge for best control response, and outboard wing weighted by pressing two or three one-inch brads into the balsa tip.

For flying, I use about 30 feet of fine Nylon thread. I use an ice cream bar stick for a control handle, since it gives much better "feel" of the controls and plane than a heavier handle.



These plans are full size, so clear the bench! Little Joe will accommodate a variety of the small Half-A's

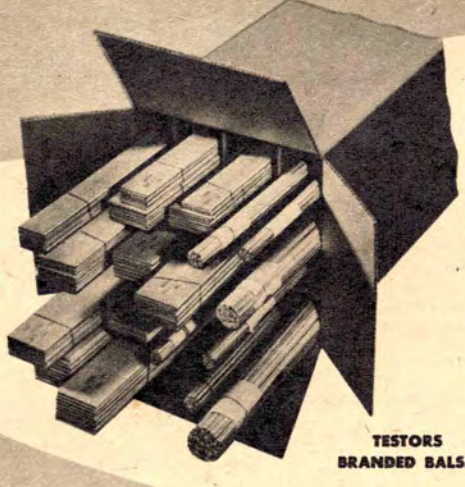



1/4" SQ. L.E.
.015 CONTROL LINE LEAD OUT WIRES (SHOWN FOR CLOCKWISE FLYING. REVERSE IF DESIRED)
1/4" SHEET
L.G. SHOWN TRUE LENGTH
TIN CONTROL HORN
1/32" DIA. WIRE
USE CLOTH HINGES
FRONT STRUT
REAR STRUT
6
5
4
STIFF PAPER HEADREST
1/16" SHEET
1/32" SHEET SIDES & TOP
1/32" DIA. PUSH ROD
STAB. SLOT
SOLDER PUSH ROD SPLICE
1/2" X 1-3/4" SOFT BLOCK HOLLOW OUT AS SHOWN
1/32" DIA. WIRE
1/16" X 1/8"
SOFT BLOCK
1/32" SHEET

TESTORS ...costs a little m

CEMEN

...for modelers who want the be



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LIES, TOO...by name!

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R/C AT THE NATIONALS

Once again Arkansas' most famous modeler gives us a good look at America's top radio-control competition

Drawings and Text by H. A. THOMAS

■ Competition in radio control flying has now rounded out its first decade. Inactivity during the war years is partly responsible for the slow progress reflected in the early portion of this period. There was virtually no model industry support until recent years and consequently contest flying was limited to the handful of experts ingenious enough to devise suitable models and radio apparatus. It was seldom that an individual was capable of mastering *both* the radio and the model requirements encountered.

Considering the fact that Walter and Bill Good were flying before the war with rudder and elevator control and Jim Walker made beautiful flights at the '41 Chicago Nationals with a trim monoplane having tricycle gear, rudder and two-speed engine control, we must admit that there has been no revolutionary advance to date but rather a refinement in model design, transmitter and receiver design and control devices. The rubber-powered escapement, still the foremost control actuator, was an early development.

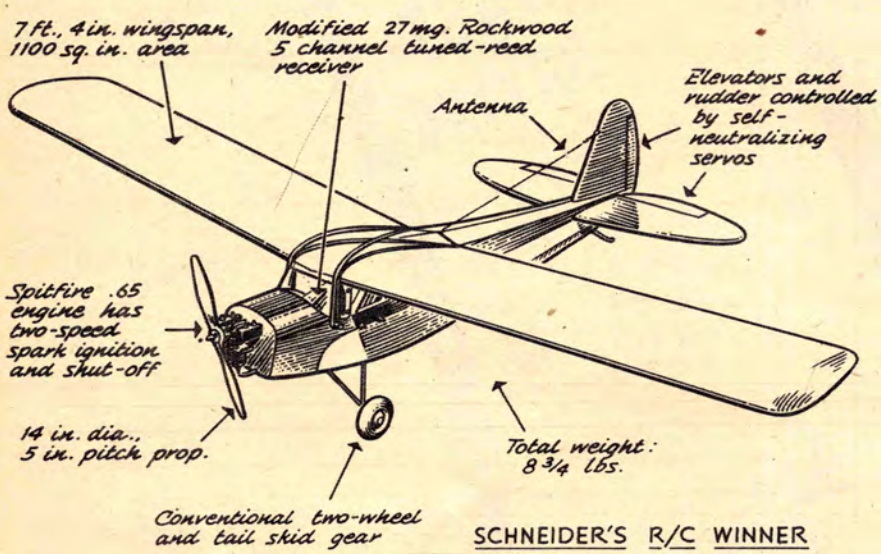
A great deal has been written on the specialized design requirements for radio-control models. And it all makes sense. But there is cause to wonder about it, remembering the performance Web Hill put up at the '52 Nationals for a sixth place win flying a 14-year-old antique gas job recently radio-equipped. After completing its official hops, this ship continued to fly unofficially when stiff breezes halted contest flying; it was highly maneuverable and might have placed higher had some type of engine control been provided.

Equally paradoxical in the field of forty-five contestants was the small, close-coupled original model flown by L. D. Crisp to fourth place. Its proportions were in extreme contrast to Hill's model, yet it was described by Contest Director Dick Schumacher as "an amazing airplane." (No small praise!)

The facts are obvious: there is a world of latitude in what may be done successfully in model design for radio control. This heightens the interest. While on the one hand in free flight gas category where we see a monotonous sameness in the large, light, squarish competition models, the '52 Nationals prove unquestionably that in radio control there is no one fixed style to which we must adhere.

Though designs differ in many aspects, a close examination indicates three factors common to most successful radio control ships: a medium to long nose moment; trim and balance making for an under-elevated flight condition compared to normal free flight standards; and a somewhat diminishing of stabilizer area and an increase in fin area (McCullough found it necessary to add considerable fin area in the field).

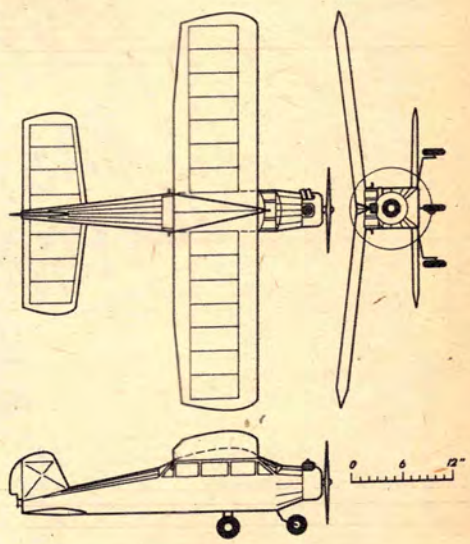
Quickly scanning the winners' list


7 ft., 4 in. wingspan, 1100 sq. in. area
Modified 27 mg. Rockwood 5 channel tuned-reed receiver
Antenna
Elevators and rudder controlled by self-neutralizing servos
Spitfire .65 engine has two-speed spark ignition and shut-off
14 in. dia., 5 in. pitch prop.
Total weight: 8 3/4 lbs.
Conventional two-wheel and tail skid gear

SCHNEIDER'S R/C WINNER

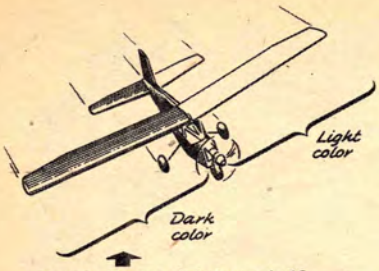
1st Place

Alex Schneider, San Francisco, Calif. Cub Cruiser semi-scale model with modified Rockwood 27 mg. tuned-reed five-channel receiver and transmitter; two-speed engine and cut-off, elevator and rudder control via self-neutralizing servos; 7 ft. 4 in. span; 1100 sq. in. wing area; 8¾ lbs. gross weight; Spitfire .65 engine; 14/5 propeller; extremely smooth and realistic maneuvers amassd 261.8 points (23.5 margin).

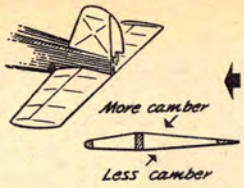


4th Place

L. D. Crisp, Perrysville, Ind. 465 mg. Macnabb receiver and transmitter; Bonner compound escapement and motor control; K&B Torpedo .19; 9/4 propeller; four ft. span; 480 sq. in. wing area; 3½ lbs. gross weight; very fast, capable of smooth take-offs; rear gear legs dural, front is steel wire.

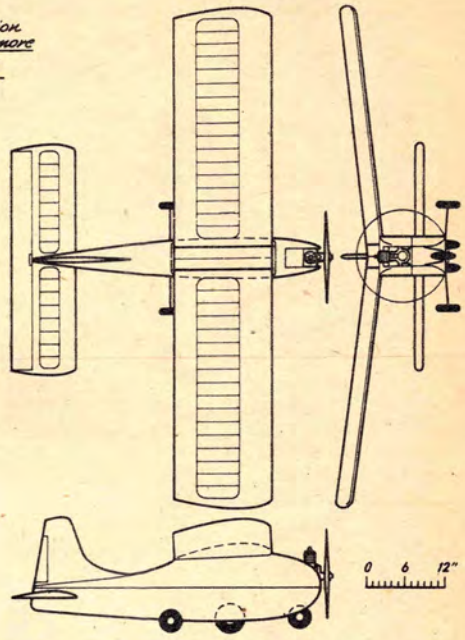


Dr. J. M. Poco painted one half of model light, the other dark to aid in orientation at a distance . . . colors tell if distant model is "coming" or "going" —



L. D. Crisp's simplified-section stabilizer was reversible . . . more camber up in windy flying, less camber up for calm —

Butler's antenna in wing gave fine "going away" reception —



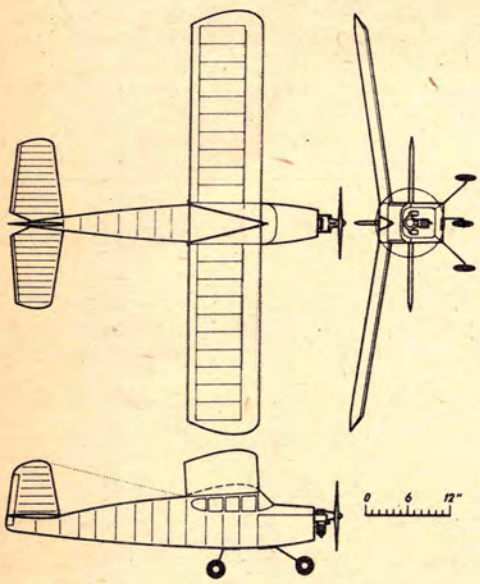
we see *1st:* Schneider's modified semi-scale Cub Cruiser, very realistic, large, heavy, equipped with multi-channel Rockwood receiver and having engine, rudder and elevator control. *2nd:* William Deans' standard Rudder-bug, with controls and radio similar to Schneider's entry. *3rd:* Jim Walker's familiar contest model, unlike any other entered, having complex controls, a large, heavy, powerful ship with tricycle gear. *4th:* Crisp's squat, short, original design, extremely fast and maneuverable, using 465 mg. receiver and Bonner compound escapement and motor control. *5th:* Ray Ragalia's Cub Cruiser, a sistership to Schneider's first place winner. *6th:* Web Hill's agile old-timer, flying all over the place and scoring bull's-eye spot landings with elementary rudder-only control.

7th: E. J. Brown's light, fast "CQ" which gained maneuverability points through deft handling, being a sensitive ship with simple controls provided. *8th:* Bauer's "Susie," a light, very conventional cabin ship with 54 mg. two-tube receiver which gained points through smooth, straight take-offs (tricycle gear). To continue the list would add to the great variety in sizes and types already evident. The high caliber consistency among the winners is borne out by the mere 16 points separating the second, third and fourth place winners.

Worth special mention is Ray Morgan's 14th place winner, the smallest ship entered, having a Cub .09 engine, light frame and standard 27 mg. Aerotrol radio which flew convincingly throughout the contest week; and ever-original Claude McCullough's chunky five-wheeler. The latter hit the peak in Mac's add-a-wheel-a-year progression and was an intelligent effort toward point-making (*Continued on page* 64)

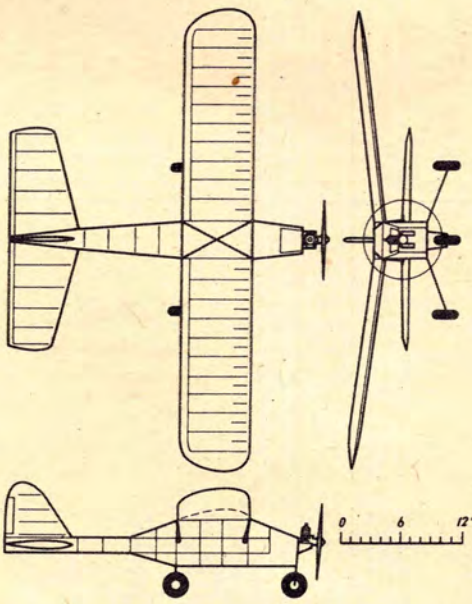
13th Place

Claude McCullough, Ottumwa, Iowa. "Wizard" has 465 mg. Macnabb receiver and transmitter; pulse presence-omission relay delay circuits for secondary controls; transmitter keyed by electric motor-driven pulser; proportional rudder; two-speed engine and cut-off; elevator and brakes operated by servo motor; Atwood .49 engine; 12/5 propeller; seven sq. ft. wing area; 11¾ lbs. gross weight; five-wheel l.g.



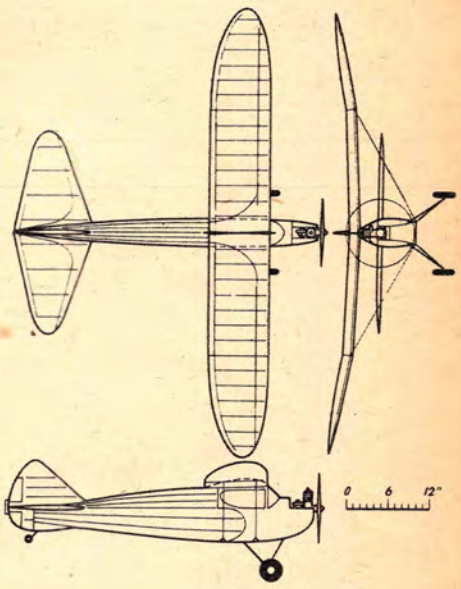
8th Place

Andrew Bauer, Long Beach, Calif. "Susie" has 54 mg. two-tube, original receiver and 4 watt transmitter; rudder control only; K&B Torpedo .19; 11/6 propeller; 600 sq. in. area; 58 oz. gross weight; ship is fast, capable of beautiful straight take-offs; tricycle gear rigged to slight tail-high attitude.



14th Place

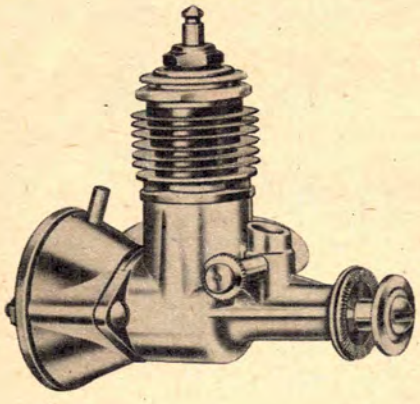
Ray Morgan, Patterson, Calif. Super Aerotrol 27 mg. receiver and transmitter; Bonner SN escapement; rudder control only; Cub .09 engine with Walker fuel regulator; 314 sq. in. wing area; entire model silk-covered; ship had two wings with different dihedral angles (flown with one having lesser amount); very responsive, capable of sharp turns.

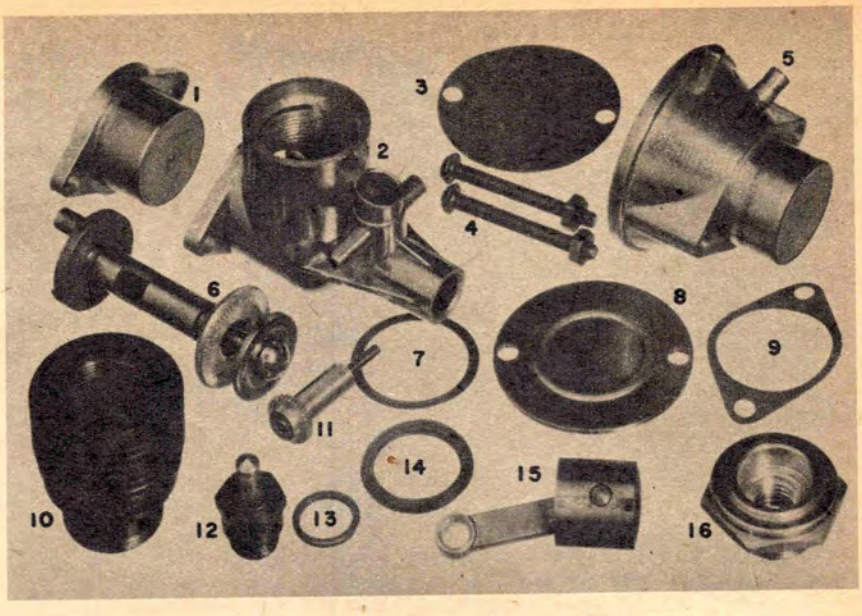


6th Place

Webster Hill, Sherman Oaks, Calif. 465 mg. Macnabb receiver and transmitter; rudder control only; Ohlsson .23 engine; 10/6 propeller; 4 lbs. gross weight; wings held to fuselage by rubber bands and aligned by flying wires; ship highly maneuverable, moderately slow; converted from 14-year-old free flight to radio-control model

MOTOR OF THE MONTH





Cub .049X

Herky's new Half-A was designed with the expert in mind; it packs real wallop

■ For several years the Cub .049 has been one of the popular low-priced Half-A engines. Now the Herkimer Tool and Model Works introduces a top performance Half-A in the medium price field for advanced modelers and contest fans.

In general appearance the new .049X is similar to the .039 model, having radial motor mounts and a built-in fuel tank. The .049X is slightly larger in all dimensions. A hardened and ground crankshaft is used with a square rotary valve port. The end is tapped to receive a machine screw for mounting the propeller. This reduces chances of damaging the shaft in a crash. A hardened steel piston is used with a wrist pin. Bearing areas at each end of the connecting rod are ample for long engine life.

The .049X is sold in a combination package complete with propeller, fuel tank and neoprene tubing. A separate back cover plate is also provided so the engine can be used with a separate fuel tank.

This new engine has been designed for high-speed operation. Port areas are much larger than average and a high compression ratio is used in combination with a short stroke to produce high rpm. Extra fuel is drawn into the base with a high-base compression and square rotary valve ports. Test results show speeds of 17,200 rpm on a 5/3 propeller which is very good for Half-A powerplants.

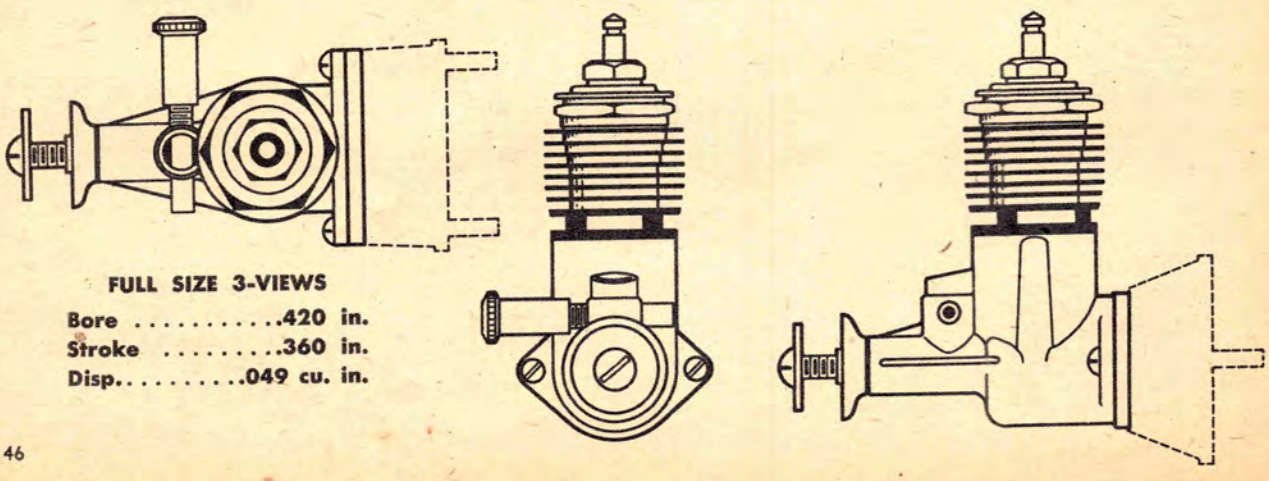
Good fuel suction is obtained by using the square rotary valve, high base compression and a venturi shaped carburetor. This should make the .049X engine suitable for sport and stunt as well as speed flying.

The engine test was started with a long break-in at 11,000 rpm. An extra head gasket was added to reduce the compression ratio and eliminate detonation. After complete break-in, operating temperature dropped due to less friction, and the gasket was removed to get top rpm.

A great number of speed fans hop up their Cubs by removing one or two headgaskets and operate at the highest compression ratio possible without detonation or "cackling." Tests with various fuels showed that best results were obtained with OK Cub Glow Fuel as recommended by the manufacturer. After four hours' running, performance was good in the low and medium speed range. Rpm tests were made in the low speed range and then the break-in was continued on a 5/3 propeller. This brought the speed up to 17,200 rpm in half an hour.

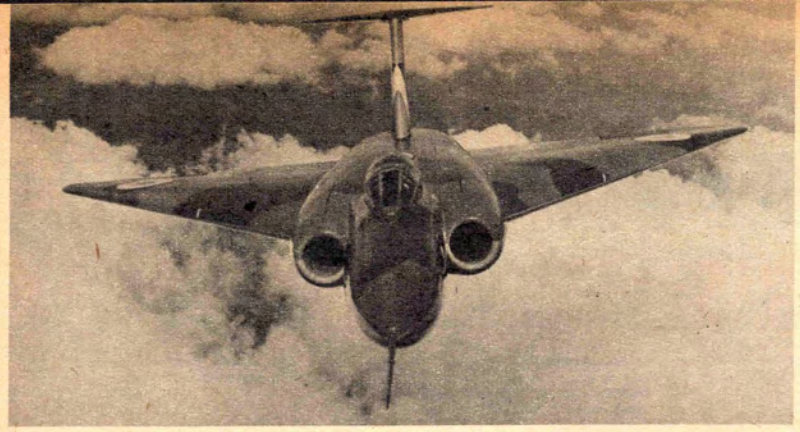
Parts Illustrated

1. Rear cover: aluminum die-casting, .10 oz. 2. Base: aluminum die-casting, .27 oz. 3. Tank gasket: vellumoid. 4. Rear cover bolts: steel, 3-48 N.C. thread, .07 oz. 5. Fuel tank: aluminum die-casting, 1⅛" (*Continued on page* 73)



FULL SIZE 3-VIEWS

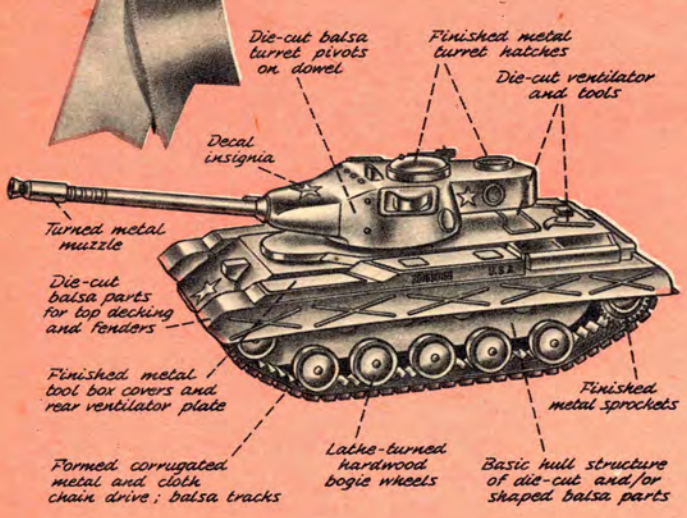
Bore .....420 in.
Stroke .....360 in.
Disp.....049 cu. in.

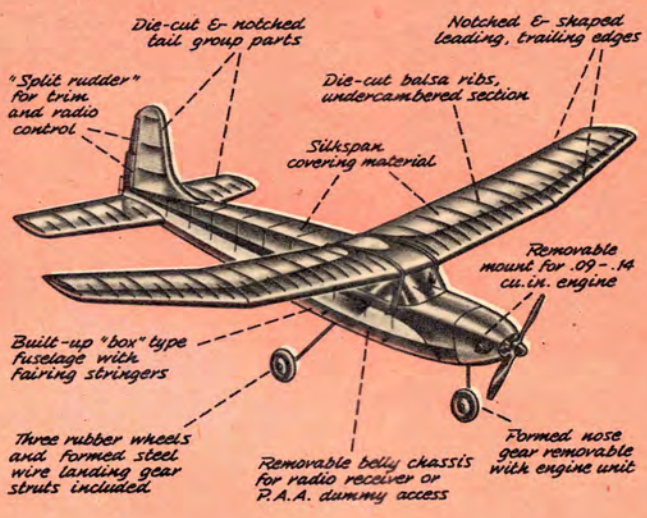


Gloster Javelin

DRAWN BY ROY CROSS

TAIL PARACHUTE
BLUE
RED
STANDARD PITOT
RADOME
WD 804
JET EFFLUX
TAIL BUMPER
U/C DOOR & FAIRING PANELS
MUDGUARDED NOSE WHEEL
SERIAL NUMBER
FLAP
UNDERSIDE VIEW
NOSE WHEEL DOORS
TWO 7500 LB.S.T SAPPHIRE JETS
"NO WALK" & PANEL LINES
AIR BRAKE
MODEL STUB SPARS
TOP VIEW
WHEEL RETRACTS INWARDS
LANDING LIGHT
FEET


Die-cut balsa turret pivots on dowel
Finished metal turret hatches
Die-cut ventilator and tools
Decal insignia
Turned metal muzzle
Die-cut balsa parts for top decking and fenders
Finished metal tool box covers and rear ventilator plate
Formed corrugated metal and cloth chain drive; balsa tracks
Lathe-turned hardwood bogie wheels
Basic hull structure of die-cut and/or shaped balsa parts
Finished metal sprockets


Die-cut & notched tail group parts
Notched & shaped leading, trailing edges
"Split rudder" for trim and radio control
Die-cut balsa ribs, undercambered section
Silkspan covering material
Removable mount for .09 - .14 cu.in. engine
Built-up "box" type fuselage with fairing stringers
Three rubber wheels and formed steel wire landing gear struts included
Removable belly chassis for radio receiver or P.A.A. dummy access
Formed nose gear removable with engine unit

Scale Walker Tank for Mantel

Mercury Models offer Russian, German, U. S. kits

■ As a change of pace we include a kit for a model tank among our Blue Ribbons. This one is the Walker Bulldog, and the kit is produced by Mercury Model Airplane Co. (Brooklyn, N. Y.). It is one of a series of tank "solid" kits, of which there are three others, the German Tiger, Russian Stalin, and U. S. Patton. Each of these tank kits sells for $2.95, and contains sufficient parts to make a very realistic model.

For those model plane builders who have never tackled anything of this sort, we can say that construction and materials are very much like those they have been used to, in plane kits. There are, however, a large number of turned hardwood parts, necessary to make the drive mechanism. The tank body or hull is built up from balsa sheet and blocks, most of which are ready formed. When the hull has been assembled, the running gear is installed. It is here that most of the hardwood parts are used. To make a realistic track, the kit includes a length of corrugated metal strip, and stamped metal sprockets for the drive. The track itself is made up of balsa strips cemented to cloth ribbon 1″ wide. If made according to the instructions, the result is very realistic. A metal sheet in the kit is stamped in the form of tool box covers and a large air vent. Metal screening is supplied to make another ventilator.

The turret is a separate assembly, and since it is attached to the hull by a dowel, may be turned around, as desired. A shaped block of balsa ⅞″ thick, to be cut to a slanting shape on the sides, is the main part. Plastic and metal details are furnished to assure a most lifelike look to the finished turret. There are several metal hatch covers and a die-cast machine gun. The long gun is made from ¼″ dowel, and the complex muzzle shape is perfectly duplicated by a turned aluminum piece.

Numeral and star decals are furnished for the finishing touch. The plans are very complete, and contain many details to aid the builder.

Bootstraps Is Sleek-looking R/C

Berkeley "A-R/C" kit designed by Henry Struck

■ Another number has been added to the Berkeley line of ships specifically engineered for such load-carrying purposes as PAA-Load and R/C. Designed by Henry Struck, and produced in kit form by Berkeley Models, Inc. (West Hempstead, N. Y.), this attractive ship spans 54″ with about 350 sq. in. area, and weighs around 21 oz. empty. It will carry as much as 14 oz. of radio gear. *Bootstraps* was designed with the Cub .09 in mind, but the new Cub .14 should be ideal for it, allowing a bit of extra power to give real performance when needed.

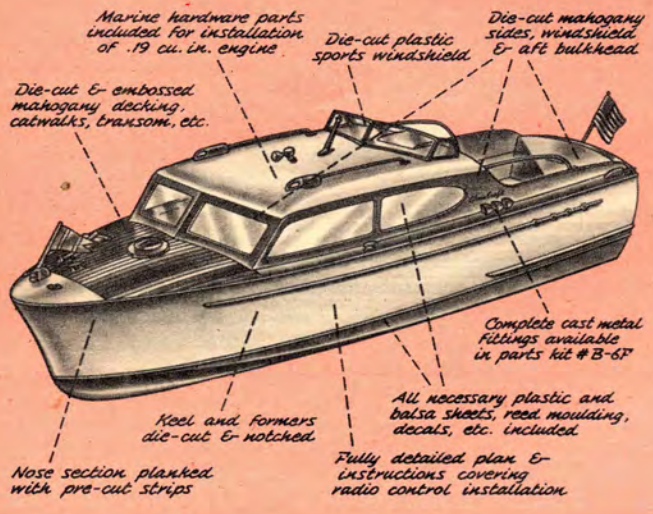
The fuselage is of stringer and upright construction, but is braced by heavy balsa sheet from the rear of the wing forward to the firewall. The engine is mounted horizontally, and the entire motor mount including the nose wheel of the trike landing gear is attached by rubber bands, to give real crash protection. The cowling itself is attached to the fuselage, with a separate set of rubber bands, so that it may be detached for servicing the engine or tank.

A feature of the ship is the use of a radio "chassis" which may be removed through the bottom of the fuselage, where it is held by two dowels. This unit may include all the batteries needed for R/C flying, but the escapement is located in a compartment near the tail. The rear axle for the landing gear is attached to the chassis. Fully formed gear wire is furnished, and the three wheels are of rubber material.

The stab is detachable and of conventional construction with a slightly lifting section. As is to be preferred on R/C ships, the vertical tail area is permanently attached to the fuselage. There are two rudder tabs, one for R/C use and the other for trim purposes.

Polyhedral is used on the wing, but the overall dihedral is not excessive. Shaped and notched leading and trailing edges are supplied for both wing and stab, and all ribs are die-cut, of course. The wing airfoil has moderate undercamber.

RIBBON MODELS


Marine hardware parts included for installation of .19 cu. in. engine
Die-cut plastic sports windshield
Die-cut mahogany sides, windshield & aft bulkhead
Die-cut & embossed mahogany decking, catwalks, transom, etc.
Complete cast metal fittings available in parts kit #B-6F
All necessary plastic and balsa sheets, reed moulding, decals, etc. included
Keel and formers die-cut & notched
Fully detailed plan & instructions covering radio control installation
Nose section planked with pre-cut strips

Scale Chris-Craft Boat

Sterling "boatyards" produce kit for Super Cruiser

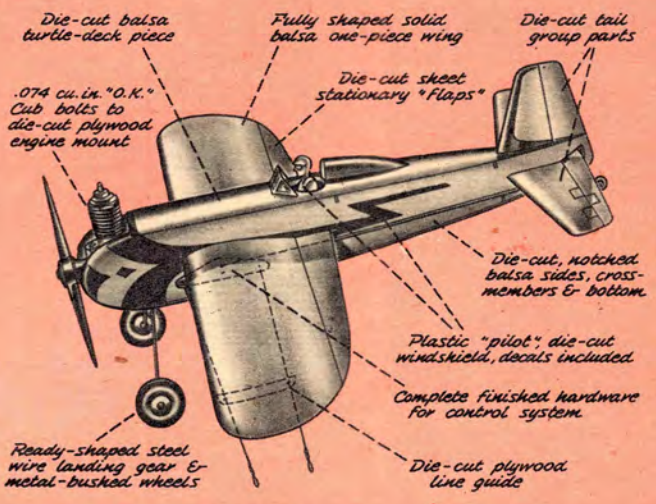
■ Latest addition and new flagship of the Sterling fleet of boats is their Chris-Craft 32 ft. Super Deluxe Cruiser. This builds up to a model of 28″ length and 9¼″ beam, and is plenty big enough to carry radio-control equipment, as well as either electric or gas engine drive. The kit sells for $9.95, and for those who want the last word in detail, there is an additional kit of die-cast metal fittings for $3.50.

The boat kit itself contains all parts necessary to build a working model, including rudder, prop, shaft and housing, and gas engine mounting hardware. Produced by Sterling Models (Philadelphia, Pa.), the kit was designed from factory plans of the original cruiser, and is an absolute scale copy. The extra metal fitting kit contains parts that might be desired to finish off the boat for a shelf model; in it are twin scale size props, cabin running lights, air horn, twin throttle levers, steering wheel, etc.

The hull is of built-up construction, requiring first the assembly of a set of bulkheads on the keel strip, and the addition of sheer and chine strips. The balsa planking is then added. Actual planking in narrow strips is needed only at the bow; the rest of the sides and the entire bottom are of sheet balsa.

The forward deck, transom, side and rear catwalks, and quite a few smaller parts are of mahogany veneer. Most of the external cabin parts are of mahogany plywood. The deck is scored to represent the planking on the big cruiser. Balsa sheet furnished for the cockpit flooring is similarly scored. The size and design of the model allow plenty of room under the rear decking to hide the mechanism for actuating the rudder, in an R/C model. The commodious cabin naturally affords all the space needed for either gas or electric drive, radio receiver, and all the necessary batteries.

The plans are beautifully detailed, as they must be for a kit of this type. The 3′ x 4′ plan sheet is covered on both sides with drawings, instructions and photos.


Die-cut balsa turtle-deck piece
Fully shaped solid balsa one-piece wing
Die-cut tail group parts
.074 cu.in. "O.K." Cub bolts to die-cut plywood engine mount
Die-cut sheet stationary "Flaps"
Die-cut, notched balsa sides, cross-members & bottom
Plastic "pilot", die-cut windshield, decals included
Complete finished hardware for control system
Ready-shaped steel wire landing gear & metal-bushed wheels
Die-cut plywood line guide

This Character is Real Sport

Scientific's "Sport Racer" designed for new flyers

■ This little plane, as its name suggests, is dedicated to the sport flyer. It has very smooth flying characteristics, and is ideally suited to the beginner in control line flying. For those who want more in the way of stunting ability, it is suggested that the fuselage be shortened somewhat; however, other planes in the extensive line of the maker are specifically designed for such use. A product of Scientific Model Airplane Co. (Newark, N. J.), the kit sells for $1.50.

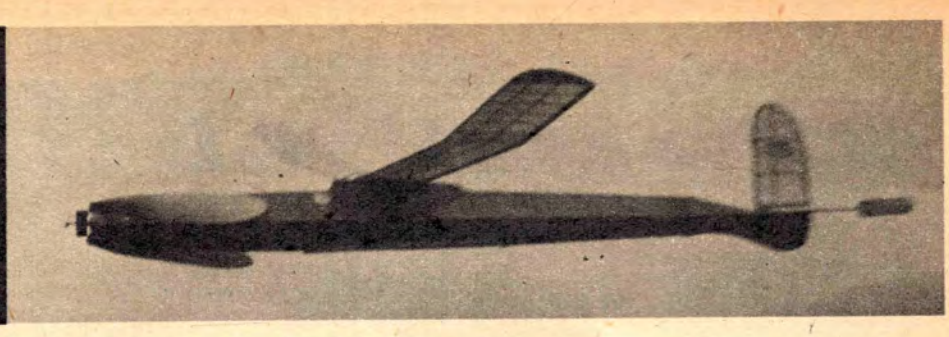
The fuselage is a simple box, with 1/16″ sheet balsa sides and bottom, and a ¼″ top. All parts are die-cut and the wood throughout the kit is of very good quality. The top must be rounded off, after the fuselage has been assembled. A plastic pilot and a printed sheet windshield add to realism. The firewall is of sturdy 3-ply; it is punched for the three screws that hold the radial-mounted engine.

The wing is a single sheet of balsa ¼″ thick, which has been shaped to a cambered airfoil section. It needs only to have the tips rounded off. As in many other Scientific kits, the wing area is extended by cementing a piece of thin balsa sheet to the trailing edge of the milled section. The control mechanism of Jim Walker type is all contained within the fuselage, to add to attractive appearance. There is an aluminum bellcrank, a ply control horn, and a piece of music wire to connect them. Lead-out wires are external. Tail surfaces are of 1/16″ sheet balsa.

Small parts including the necessary tiny wood screws are packed in a heavy plastic envelope—you won't open this kit and find any of them missing.

The plans show six construction stages in exploded form, and a full-scale side view; they are the work of Walter Musciano, who designed the plane. The test ship was flown with an .074 Cub engine, and showed a speed of around 50 mph. Half-A engines of much smaller size may also be used, though for the .020, the weight should be kept down. With the .074, the model weighed 5 oz.

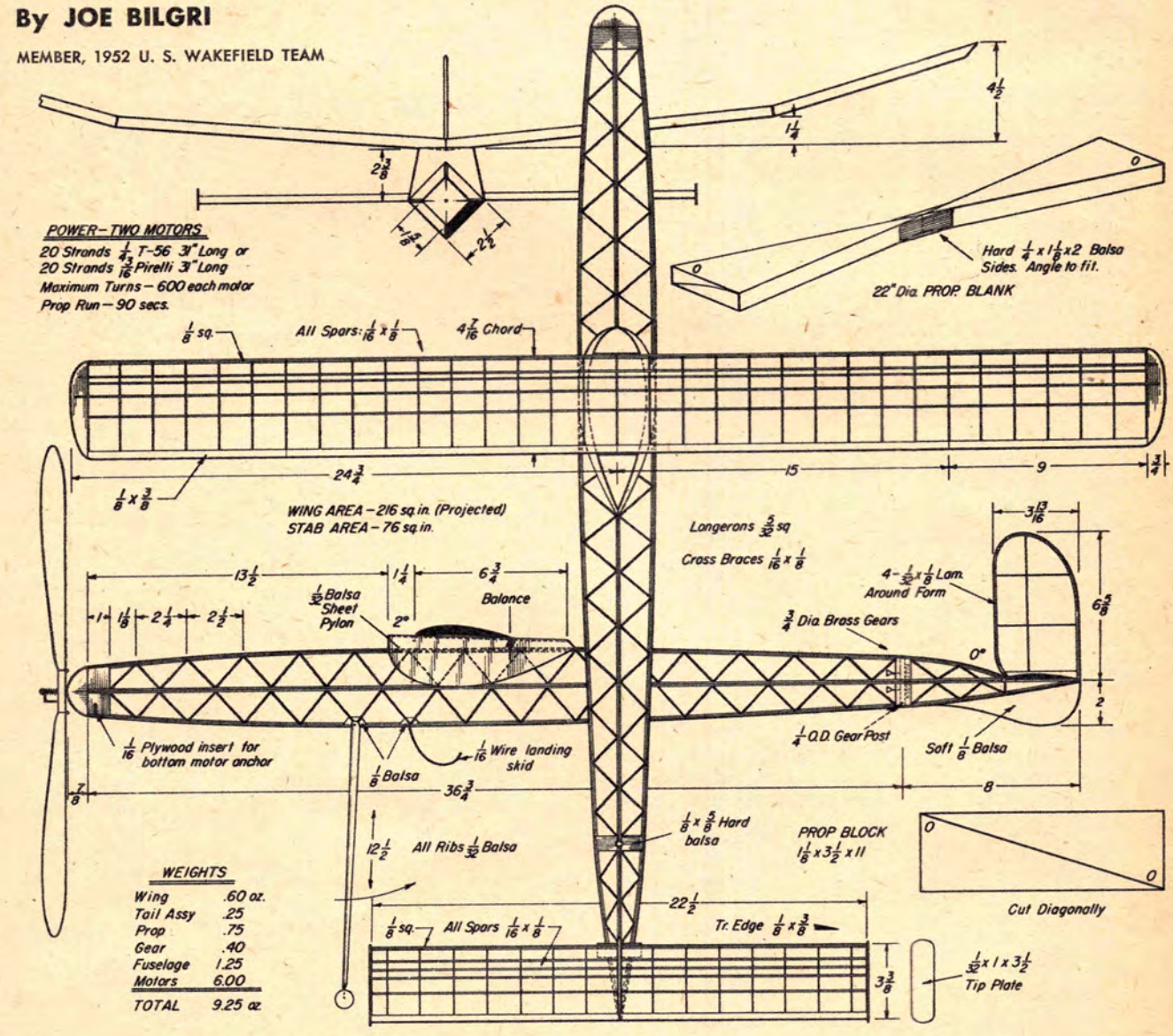
The Drifter



■ The *Drifter* was built during the Fall of 1951 after hearing what happened to the U.S. team in Finland from Joe Foster and Manny Andrade. They told of the need for a high-climbing, tight-circling model that could take the wind. Although the *Drifter* did not win in Sweden in '52, it wasn't the model's fault, for it was lost on the first round which it led by a time of more than forty seconds. Although the model was designed for the wind it is still capable of turning in maximum flights in early morning air. Its lowest official contest time is 4:07! While the construction of the *Drifter* is similar to other models the balance point on the trailing edge of the wing differs from most geared models. This and the low constant pitch prop are the two most important features of the ship. It flies best when adjusted for a right power flight with a left glide circle. Aluminum, brass and nylon gears have all been tried with equal results and very little difference in weight.

By JOE BILGRI

MEMBER, 1952 U. S. WAKEFIELD TEAM



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18" Wing "½A" U Control
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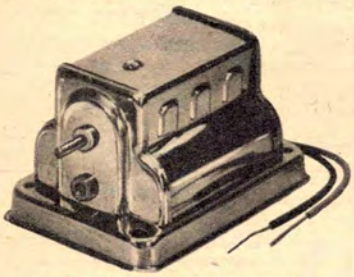

No. 109 DELUXE ELECTRIC MOTOR (looks like a Diesel) 3½ to 1 reduction gear drive. Operates on 3 to 9 volts, reversible. Ample power for large model boats. Entire motor nickel-plated. Size, 1⅞ x 2¾ x 1½.. $4.50

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Weight 4½ oz.

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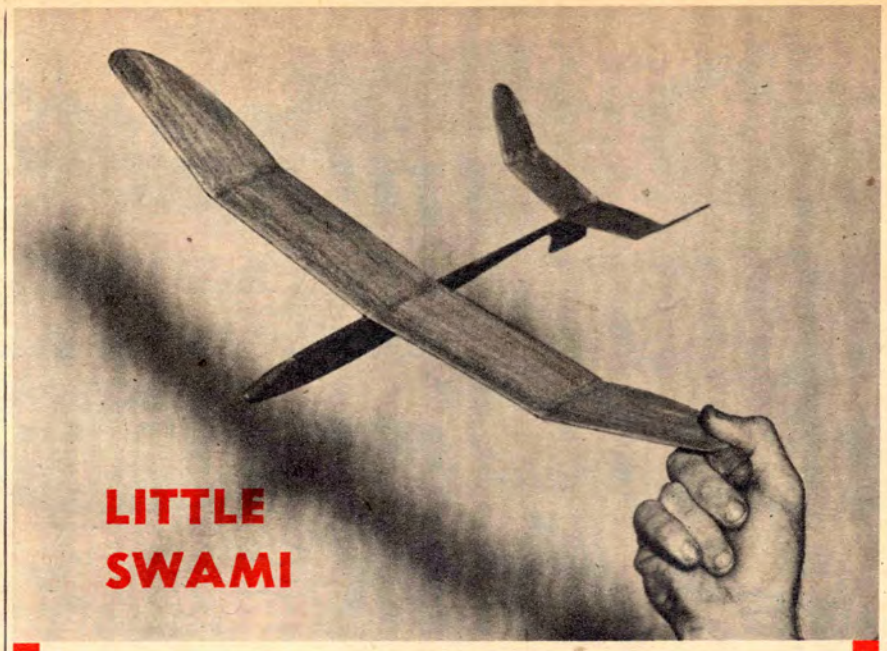
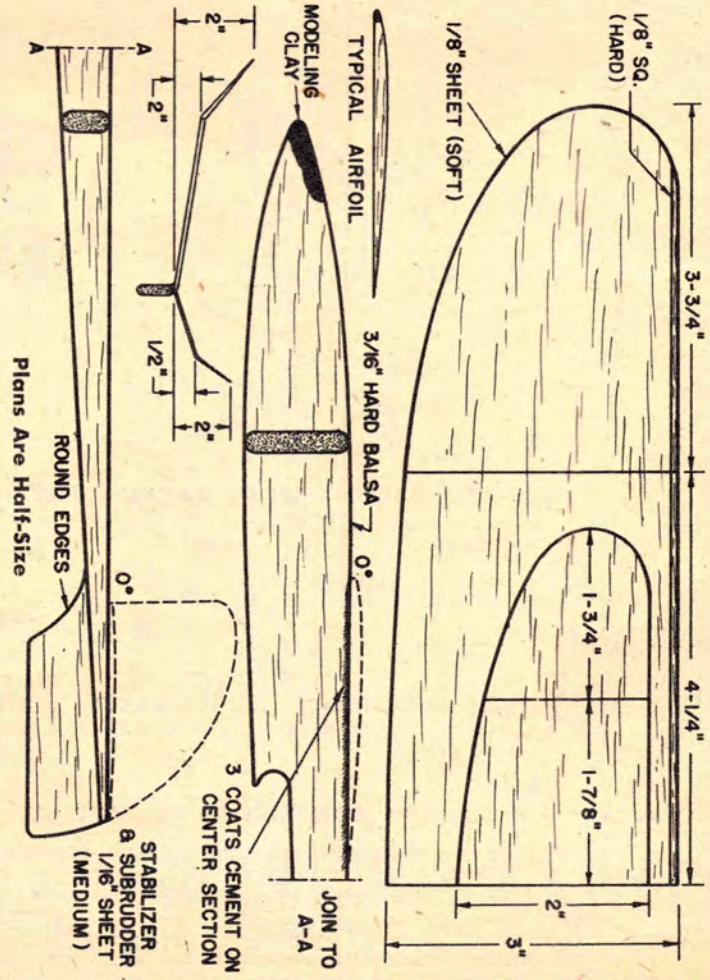


LITTLE SWAMI

■ *Little Swami* has won a number of contests including a past Southeastern Championships. The polyhedral stabilizer gives a rapid "snap" at the top of the climb, and by using the finger notch launch, high altitude can be obtained. If your throwing arm is not powerful, add about 1/32" negative incidence under the elevator, and that will allow a better roll out than when set at 0-0 deg. as shown on the plans.

The wing and stab are made from light wood and covered with Jap tissue. Use a red or orange paper because of advantage in visibility. Two coats of sanding sealer followed by one coat of gloss top coat dope was used on the original. Sand between all but the last coat.

—George Perryman



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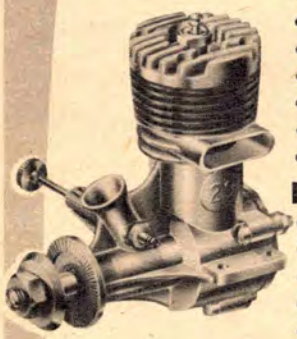

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Full pattern stunt model makes a nice picture. Any guesses where the shot was made? Frankfurt/M-Bonames, Germany. Karl Gnewikow built it. Says C/L fascinates countrymen.

Drive on to combine all international contests

■ Response from across the sea has come to comments in a recent Western Roundup column regarding the future of "World Championship" model airplane competitions.

For many years the Wakefield contest has been the only event of International status to develop really world-wide interest, but there is no doubt that the supporters of the other phases of modeling are awaking to the fact that they should have their fair share of International recognition. At least such is the contention of C. S. Rushbrooke, well-known editor of the British "Aeromodeller" publication.

Three years ago "Rushy" proposed that the Society of Model Aeronautical Engineers (the "AMA" of England) approach the Federation Aeronautique Internationale (the "FAI"—the world-wide governing body for sporting aviation) with the suggestion that a combined World Championships be conducted each year as a form of model "Olympics." As Mr. Rushbrooke points out, to date it has been necessary for various small teams, plus team managers, to travel to different parts of the world each year to compete in different "International championship" events, and participation in many instances has been handicapped because of lack of finances.

Spitfire revs up in the morning sunlight. The real thing—well, hardly; it's a French model photographed by Pierre Appollot of Grasse. Back lighting produces the dramatic effect.

Rushy's scheme is to group all the Championship affairs — the Wakefield (rubber models), the Swedish Cup (gliders), F.N.A. Cup (free flight gas) and the Daumerie Cup (control line models)—into one big competition which would travel from country to country each year in a predetermined arrangement.

In this way, he contends, it would be possible to draw up a World Championship calendar for 10 years ahead and with such a fixed list, the task of organizing for overseas travel or setting up the meet in one's own country could be tackled well ahead of time.

Our English authority believes that it would be better for all concerned for nations to send one larger team under the management of one individual to one major contest for (overseas, at least) it is usually possible to obtain special travel rates in such cases. He observes that at the present time to fully support the four main affairs listed takes the services of 22 individuals in the case of British teams—six for the Wakefield and four each for the other three contests, plus a team manager for each. Under Rushy's system a maximum of 19 individuals would require financing, and he's pretty certain that travel economies could be instituted if a party of this strength went to one competition.

Ah, the happy modeler with the inevitable onlooker. R. E. Lux of Los Angeles is responsible for this interesting study. We never did find out how the Fokker flew; or fate of other ship.

The British leader is proposing that the F.A.I. standardize the size of International Championship teams at 4, and he does not feel that the Wakefield fracas should be treated any differently than the other championship events. It is a good possibility, of course, that in many instances under the "combined contests" arrangement, the official groups might be less than 17 or 19, since contestants might qualify in more than one event.

The top two engines are contra-rotation E.D. 2.46 cc diesels which power this free flight (!) scale Handley Page 42 transport model. J. Newton built it. Span 7.5 ft., weight 8 lbs.

As regards to the organization and conduct of the Olympics by the host country, friend Rushy visualizes a seven or eight day meeting with flying taking place on four days, interspersed in each case with a day of test flying, processing, sight-seeing and the like. Contest organizers therefore would require but one staff to run one contest, repeating for the various events as required. The whole affairs would culminate in a banquet at which all the (*Continued on page 74*)

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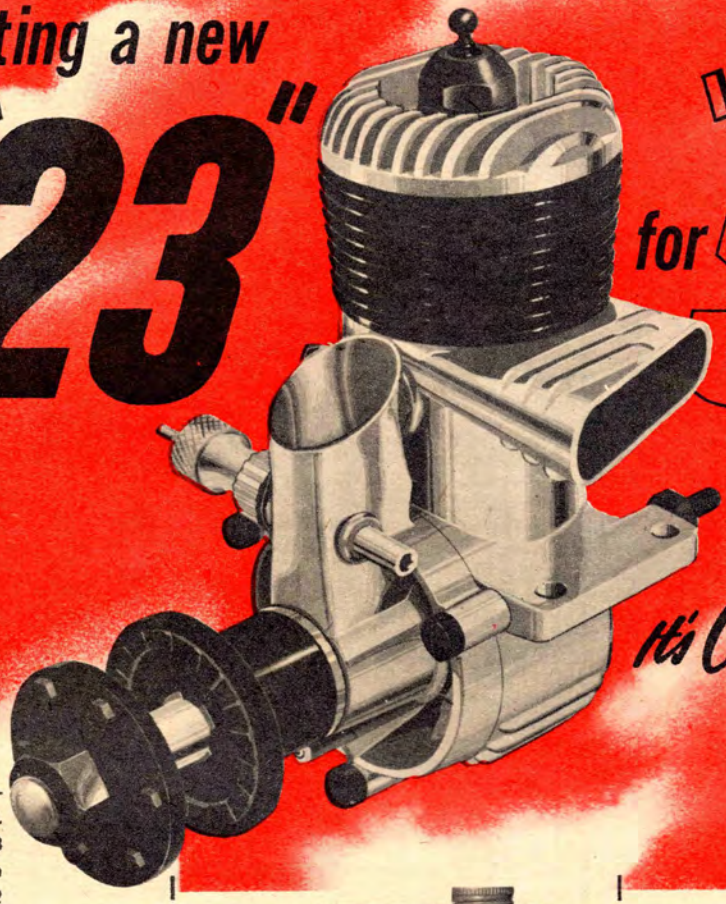

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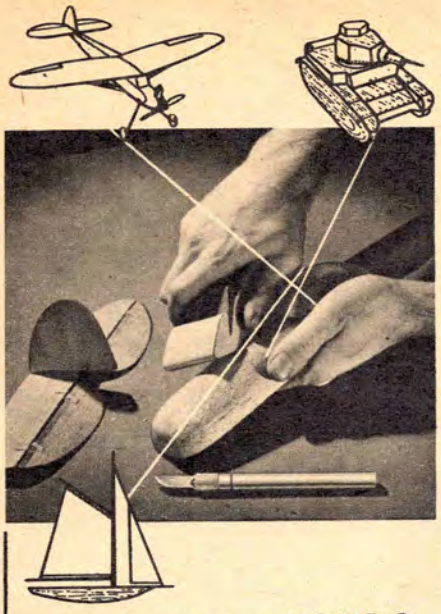

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The Corsair's First MiG Kill

(*Continued from page 27*)

reportedly concentrated was empty. Over the radio, I told Daniels that we would search the area, looking for targets.

We were in sight of the strong enemy town of Chinnampo when I caught sight of the four black dots that streaked across the sky. Daniels saw them at the same moment.

"Bogies! At eight o'clock, high!" He shouted the words into my earphones.

As if by signal, we began a tactical weave, slipping back and forth across the sky, each plane ending up in such a position that it covered the other's tail. For a moment, I lost track of the MiGs.

Suddenly red tracer shells started to whip past the nose of my plane, seeming to beat at the propeller. I jerked my head to the left. The plane was coming straight toward me, fire belching in short bursts from its heavy cannon.

"Drop your load and turn into them!" That was what we had been told to do. My fingers punched at buttons and switches, releasing the heavy load of bombs and my extra gasoline. "Try to get your guns on him." I jerked the controls to force the plane over on the tip of its left wing.

The enemy jet was moving too fast. It was slipping past my own propeller, flaunting its yellow-trimmed tail at me as my own plane started to roll into a bank. Desperately I pushed the controls in the opposite direction, feeling the sudden change of direction in my stomach as the ship seemed to hang there undecided for a moment in the air, then responded.

The jet was pulling up, starting to climb as my gun sights came to bear on the dark funnel of his tail. I clamped my finger down hard on the trigger button and heard the dull blast of twenty-millimeter shells bursting from the wings.

I pressed down on the button for what seemed like hours. It couldn't have been more than five seconds. At first nothing happened, then grey smoke started to flow from the rear of the enemy plane. The grey turned to black. Then the small black lump that was the pilot shot into the air, tumbling over and over in its rise.

"Take up a tactical weave again!" I shouted at Daniels.

He shouted back. "More MiGs! Four more."

As I ordered him to break hard left and head for the water, more red tracers started to streak past my nose. Then there was that sickening fear-building explosion in my wing.

I bailed out, jerking in my harness as another MiG dived at me, shells cracking past my ear. Above, another MiG was still on the tail of my Corsair, the pilot apparently unaware that I had jumped. I watched as he fired more tracers into the crazily spinning hulk.

Lieutenant Daniels was low over the water now, trying to shake the other MiGs off. Suddenly a black puff appeared near one of the enemy planes overhead. Then there were more black puffs.

Anti-aircraft fire. I glanced toward one of the small islands off the coast. That must be in friendly hands, I reasoned. In the excitement, I had lost track of my exact position and failed to recognize the small mound of earth and rock that seemed to hump up from the sea.

The water was coming up fast. I watched it reach for me, then glanced up at the sky once more. Far off to the north, high up, were seven small black forms. There had been eight enemy planes. Seven were left.

The water, as I hit it, was surprisingly warm. I jerked at the rings which inflated my bright yellow Mae West in a hiss of escaping gas, then started to struggle out of the water-tightened straps of the parachute harness.

As I rid myself of the water-soaked nylon, an engine roared overhead and I glanced skyward once more. It was Daniels, flying low over the water, circling my position and dipping his wings. Somewhere I heard another engine and glanced off toward the island. A Navy amphibian patrol plane was just sitting down in the water.

There was nothing I could do. I waited, as the amphibian churned through the water toward me. As the pilot of the aircraft came to a near stop in the water nearby, throwing up little waves that rocked me up and down on the crest, I glanced up to see Willie Daniels climbing for altitude.

One of the Navy enlisted men was leaning far out of the amphibian's cabin, reaching for me, and I tried to push myself through the water toward him.

"How do you like this for service?" the Navy man shouted at me over the roar of the engines as he grabbed the front of my water-logged flight suit and started to pull me aboard. "We heard your distress signal as you bailed out and we started looking."

I nodded, but may hand already was rummaging in the map pocket sewed to the leg of my flying suit. I dropped some of the wet maps on the floor of the plane as the pilot applied throttle and we started to speed across the smooth surface of the water.

"Damn!" I moaned as I found it.

I was going to have to wait for further word of my new daughter. The salt water had completely washed the ink out of my wife's letter.

Amazon "400"

(*Continued from page 30*)

Rudders. Area: 12 sq. in. each. Chord: 5.625". Height: 3.75 in.

Fuselage. Length (firewall to tail): 36 in. Depth: 6 in. Width: 2.25 in. Thrust angles: 4 deg. down, 2 deg. right.

Bill of Materials—Amazon "400"

Wing

Quan.	Size	Grade	Part
2	½"x⅝"x5"	Soft	Tips
2	1/16"x3"x36"	Med. hard	Inboard plankng & T.E.
3	1/16"x3"x36"	Med.	Lower inboard planking, ribs & outboard T.E.
2	1/16"x3"x36"	Soft	Tip & misc. planking
2	⅜"x¾"x36"	Med.	L.E.
2	3/16"x¾"	1 hard, 1 med.	Spar
5	1/16"x¼"x36"	Soft	Capstrips

Fuselage

4	3/16"x3/16"x36"	Very hard	Longerons
5	⅛"x3/16"x36"	Med.	Compression members
1	⅛"x3"x36"	Med.	Planking
1	1/16"x3"x36"	Med. soft	Planking & wing mount
1	1½"x1½"x1⅛"	Med.	Nose skid
1	⅝"x2"x2¼"	Med.	Cowl
1	3/16" Diam. Birch Dowel		Pegs
1	2⅜" Sponge Rubber Wheel		
1	1/16"x3"x6"	Plywood	Wheel well, tail platform, timer-mount
1	⅛"x2¼"x8"	Plywood	Firewall
1	3/16"x⅜"x12"	Hard	Firewall backing comp. member

Tail

4	1/32"x3"x36"	Hard	Planking
1	¼"x¼"x36"	Med.	L.E.
1	1/16"x1"x36"	Med.	Ribs
1	⅛"x3"x12"	Soft	Rudders

Misc.

2	yards orange or yellow silk

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Set No. 2—Same as above with alum. cowl—$6.50

NEW NORTH AMERICAN B-25 GAS MODEL

33½" Span. Can use 2½A Wasp Motors

Set has aluminum cowls, Veco scale wheels with alum. discs. All other parts printed on balsa. One of the best detailed models even if not flown. Const. set $7.00

NEW RYAN P20 TRAINER GAS MODEL

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Can use motors .045 through .14. A specially well detailed model. Body to be covered with 1/16" sheet balsa. Set has rubber tired wheels, spinner, parts printed on balsa. Const. set, less motor $5.00

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51" Span. Radio or U Control or Free Flight.

Model suitable for "B" gas motor. Set has rubber tired wheels, plastic spinner, carved prop, ready cut wheel pants. Motor concealed in cowl. All other parts printed on balsa. Const. set, without motor $12.00

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U Control or free flight scale model. Very easy to build. Excellent flyer. Uses "B" or "C" type motor. Set has all parts printed on balsa, silkspan, wheels, full size drawing, and all parts. Dry set, less motor. $5.95

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Richard Sladek of San Diego with Torp .32, 700-sq.-in., 33-oz. Class C "Raider 700" free flight. Regular winner West Coast, Dick took Half-A open PAA-Load with longest Nats flight.

Western Modelers aim toward one-flight limit

■ From Salem, Oregon, comes an interesting club paper, the *Skycat Tail Twister*, Don Santee, editor. Don has a comment which we feel should be passed along: "If you know anyone who is a juvenile delinquent why not get him interested in model building and flying? It is the best hobby for boys that one may find. It combines manual dexterity, thought, outdoor exercise, drawing, competition, companionship and many other valuable characteristics." Well put, Don; this hobby of ours is tops; many of our best aeronautical engineers got their start with models.

A lot of credit is due Don, and Earl Cayton who does the art work. This paper is dittoed in two colors and certainly proves one thing, a little effort will go a long way. John Lenderman writes that the guys in his neck of the woods are going to try to stir up some early interest in Wakefields and the Nordic gliders with

Doug Spreng and Bob "Smoothie" Palmer check out Doug's Half-A radio-control "Short Circuit" which was designed by Palmer. Sorry we can't bring you those shirts in their California colors!

a combination contest to be held this March. There will be only these two events, something very unusual for this day and age; it will be *quite* unusual to have a big meet with no engines barking out. He seems to think the U.S. won't have a representative team this year—but we could have with a little hard work.

John has been working on a new slant in airfoils for gas models, foils which give him a very high climb. These are symmetrical and semi-symmetrical. He says the glide doesn't suffer too much when a 12½% thick job is used. For proof he flew one in a contest and with a five-minute limit totaled 12:34—real good time. He adds 10% to the area, uses shoulder wing

fuselages with high thrust lines. Says the fellows up north have a lot of new designs which will be real competition next year. The criterion for these ships will be five minutes in any kind of weather.

The Western Association Modelers have taken the initiative again in two matters which we firmly believe the rest of the country will at some future date follow. *"No model may be entered in more than one event on any single day of a WAM Sanctioned contest."* The purpose of this rule is twofold, to encourage and recognize model building ability and to speed up contest flying. This is particularly true

Bill Alford revs up for a flight while Bob Baxter fuels 'er up. Bill's baby is a Class A PAA-Load with Torp .19. Bob's job is a Half-A dubbed the "Riviera," uses a Torp .049. What flying area!

in the combat and lap races where too often the event is delayed because the modeler does not want to fly until he has used the same model in the stunt events. The other matter is to adopt a rule to use Half-A stunt for the purpose of advancing consistent winners in competitive flying groups, in order to stimulate more interest in this event.

The first, not allowing fellows to fly the same ship in two events, could hold true in our AMA contests where all one has to do to enter more than one event is change engines. Certainly more building would be accomplished, and since we do have a rule disallowing a Wakefield model to fly in this and the Unlimited event we should have more consistent rules.

WAM's last contest in Vallejo produced some speeds that are out of this world. Herm Shiman, the Nats winner, flew a Mac .65 at 158.60 mph. in the C-D Expert class, while Robert Winder flew a Mac .49 job at a 149.59 clip. In both cases this is really moving. Big question in our mind is what is the Mac .65? Janyce Wood burned up ether with a very fast 143 plus with a Mac .60 which to the best of our knowledge is the fastest a member of the fairer sex has (*Continued on page* 71)

Wayne Schindler with a flying scale radio-control model. This is a Navion of five foot span which weighs 3.5 pounds; power is Torp .29.

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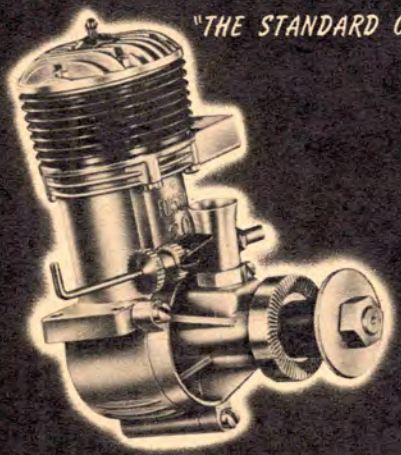

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FLIP-FLAP

PRIMER

BRITISH SE-5

SMALL FRY

Black Tiger

(*Continued from page* 33)

The original ship is painted light blue on the bottom and black on top. Three or four coats of the color dope are sprayed on for glossy finish. To get the "mirror" finish, rub the entire model with Martin-Senour Speedy Rubbing Compound. (IMPORTANT! All rubbing strokes must be *forward* and *backward* strokes to avoid bad scratches on the finish.) Now hand-rub the entire model with a DuPont #7 polish and finally, a thick coat of a good grade of auto wax.

The decals are made from Trim-Film. The Tiger's mouth is not hard to freehand. A little practice, however, is recommended! The lips are red, teeth white, and inside the mouth is orange. Finally, check the ship for balance. This is very important!

Any good .29 or .35 engine will give the *Tiger* plenty of power. If you use a .35 I recommend 65 ft. lines, otherwise 60 ft. lines will do the job. With a .35 up front you'll have power to burn!

Bob Elliott's Bill of Materials—Black Tiger

(*Balsa unless otherwise specified*)

10 pcs. 1/16"x3"x36", ribs, wings, fuselage, planking, caps, strips. 4 pcs. ⅛"x3"x36", fuselage, formers, wing tips, fuselage bottom. 1 pc. ¼"x3"x36", flaps, tail raiser block, spinner block. 1 pc. 1/32"x2"x36", wing fillets. 2 pcs. ⅜"x3"x36", stabilizer, elevator, rudder, window walls. 2 pcs. ¼"x¼"x36", wing L.E. and T.E. 2 pcs. 3/16"x3/16"x36", wing spars, bellcrank floor mount, fuselage backbone. 2 pcs. ½"x⅜"x7⅛" hardwood, motor mounts. 1 sheet ⅛"x6"x12" plywood, firewall, l.g. former, bellcrank floor, cockpit former. 1 sheet 1/16"x6"x12" plywood, fuselage doublers, cowl front. 1 pc. 1/32"x2½"x3" plywood, cowl rear. 1 pc. ½"x2½"x10", fuselage top deck. 1 pc. 2¼"x2½"x2¾", cowl.

Scrap blocks for fuselage bottom, cowl, stabilizer, fillets, aerial, and cockpit details.

9" 1/16" dia. piano wire, tail wheel gear, canopy frame. 48" 3/32" dia. piano wire, pushrods, landing gear. 1 pc. .020"x2½"x4½" sheet aluminum, canopy. 1 Veco or similar L.G. clamp, 2 "J" bolts, landing gear attachments. 1 sheet .020 celluloid, cockpit front, canopy, rear windows. 1 wedge or square tank. 1 1¾ "Froom" needle nose spinner. 1 pr. 2½" banner plastic wheels. 1 ⅞" Veco tail wheel. 1 roll electrician's tape, L.G. detail. 12" black neoprene tubing, landing gear detail. 1 large Veco or similar bellcrank. 2 large Veco or similar control horns.

Aircraft tape for hinge material; flexible lead-out wire; 3/32" brass tubing for lead-out guides. Johnson's Baby Powder for sanding sealer. Black, light-blue (Cessna gray), silver, clear, fuel-proofed dope. Dark blue, white, medium yellow, Trim-Film decals.

CONTEST CALENDAR

List meets here! Advise Air Trails 90 days in advance to do the most good for your meet. If any area restrictions on entries, be sure to state. Address of contact man in same city as site of meet unless otherwise specified. Where info on events is furnished these are abbreviated as follows: indoor rubber powered—IR; outdoor rubber powered (unlimited)—ORU; outdoor hand launched gliders—OHLG; indoor gliders—IG; towline gliders—TL; free flight gas—FF; control line speed—SP; control line scale CLSC; control line stunt—ST; team racing—TR; combat—COM; radio control—RC; rise-off-water free flight—ROW; carrier models—CAR; free flight scale—FFSC; non-flying exhibition scale—NFSC; jet speed—J; controline endurance—CLEND; Wakefield—WAK.

Jan. 11—Haddonfield, N. J. Highway Glo-Bugs' Polar Bear Meet. P. A. Karl, 20 Tanner St., Haddonfield. SP, ST, CLSC, TR, COM.

Feb. 1—Crow's Landing NAS, Calif. Aerial Robots R/C meet. Ray Morgan, 314 N. 5th St., Patterson, Calif.

May 30-31—Boston, Mass. Seventh Annual Plymouth meet.

June 21—Johnsville, Pa. Phila. Plymouth Dealers' meet.

July 27-Aug. 2—Lakehurst, N. J. & Willow Grove, Pa. 22nd National Championship Contest. A.M.A., 1025 Conn. Ave., N.W., Wash. 6, D.C.

Sept. 7—Far Hills, N. J. Bedminster-Far Hills Meet.

Sept. 20—Harrisburg, Pa. Penna. State Exchange Clubs' meet.

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Dear Joe: When our class visited New York City, I took your advice and dropped in at Air Trails (they're only ½ block from the UN!). Got a swell welcome. They told me all about the NEW 1953 "AT" Model Annual which comes out early in Feb. ← Here's a rough proof of the cover. It has a terrific report on how to start a club - we can sure use that! Lot's of great features ... a Douglas twin-engine B-26 Invader ... the most gorgeous rubber model you ever saw (by Chuck Wood) ... lots of that helpful Air-Model Manual pictorial instruction stuff ... 100's of hints and kinks on all types of models. It's the best one yet! - Jack

P.S. Suggest you do the same as I did - order a personal copy by mail. It'll be shipped out ahead of the publication date. Just send along this order form pronto →

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Air Adventurers

(*Continued from page* 16)

upright on the top of the "cart." If the wheels turn freely, you will find that a gentle blow of your breath will roll the cart away from you with ease. The area of the unstreamlined upright piece of cardboard enables your breath to push against it and move the whole unit backwards. This represents the drag of an unstreamlined body and the power of the wind to hold it back.

Now make another paper tube as in Fig. 1, and, after forming it into a streamlined shape to fit over the cardboard square on the little cart, press it down over it as shown at "B." This is just as wide as the cardboard square but presents a streamlined shape to meet the air instead of a flat surface. Blow gently against this new streamlined cart. You will find that it takes quite a bit more "wind" to roll the cart away from you, now that it has been streamlined. This will convince your audience of the extra power required to move an unstreamlined shape through the air against the wind as compared with a sleek streamlined shape that offers so much less resistance.

Let's show your friend how this flow of air can give lift to the wings of an aircraft. Take this paper streamlining from the cart and change its shape to that of a typical high-lift wing; rounded on the top side and flattened on the bottom as shown in Fig. 3. Now place it over a pencil or similar smooth stick so that it hangs down as at "A," yet can swing up as shown.

With the "wing section" hanging from the pencil, blow over the top of the paper and your audience will be amazed to see the "wing" rise up into horizontal position, proving that it is the flow of air over the top of the wing that creates the majority of the lift that enables a plane to fly. Explain to your audience that this lift comes from the fact that the air must travel farther over the top of the wing, hence the pressure is less due to greater speed. This lessened pressure above the wing combined with the normal pressure under the wing produces the lift required for flight.

Another way to illustrate the fact that the lift comes from over the wing is to insert one end of a piece of paper about three inches wide by six inches long in the top of the pages of a book. Stand the book up on end so that the strip of paper comes out of the top of the pages and hangs down behind the book. Now blow steadily over the top of the book, or use an electric fan, and the paper strip will rise up into a horizontal position and stay there as long as the air is passing over the top of the book —with *no* air going under it at all due to the book being in the way.

Show your friend how the control surface of a plane works. This is best demonstrated when riding in a car (if there is no one behind you to misinterpret this demonstration as hand signals). To demonstrate the action and power of the wind against the small control surfaces, put your arm outside the window with the elbow bent as shown in Fig. 4. With the palm facing down and the hand inclined slightly up or down the wind against it will move your arm up or down by air pressure against your palm or the back of your hand, as at "A." Now by turning your hand vertical and bending your wrist in or out you will find that your arm is swung out or in toward the window by this same air pressure, as shown at "B." Sketch "A" duplicates the action of the air against the plane's elevators, and sketch "B" the action of the rudder. If the airflow past a car at, say, 40 mph, against the small surface of a human hand can move your arm, imagine the pressure against a control surface of several square feet from a blast of air traveling at hundreds of miles per hour.

(Don't ever try this demonstration by extending your arm and hand from a moving plane or a high-speed train, because serious injury may result.)

Now let's demonstrate how a propeller works, or the rotor blades of a helicopter. This little "trick" is fun to do and may be developed into a sort of game for the best "flight."

From a circle of stiff paper or light cardboard cut a three-bladed propeller—or a

four-bladed "prop" if you prefer. Use a circle of about two inches in diameter and cut the blades accurately. Bend each blade down slightly on one side; be sure it's the *same* side for each. Balance this little prop on the top of a pencil or the forefinger of your left hand, and give a quick snap to one of the blade tips. If the pitch of the blades is sufficient, the propeller will spin off and up from its mount exactly as does a propeller or the rotors of a helicopter. Let your audience experiment with changing the pitch of the blades to see what happens from no pitch at all to excessive pitch, and explain that your snap with the finger represents the power from the engine that turns the real propeller (Fig. 5.).

Tell your audience about jet propulsion and use Fig. 6, as an example of true jet flight. Obtain a few rubber balloons and show him that the blast of air from the neck of an inflated balloon can actually propel it around the room in jet flight.

In order to make the "flight" more accurate and last longer, use one of the longer balloons and attach a strip of paper to the neck by a string to serve as a rudder while in flight. Such an "aircraft" will produce some really interesting flights. Be sure that the string around the neck of the balloon is loose enough to permit a good jet of air to escape or the balloon will not perform well. Explain that the air outside of the balloon is not required for such a flight for the jet to "push against," and that as a matter of fact if there were no air about the balloon the flight would be even faster due to less air resistance to the front of the balloon.

In Fig. 7, we see a simple way to demonstrate what we Air Adventurers mean by thermals, downdrafts, slope winds, etc. All that is required is some cold water, a candle and a folded piece of cardboard. Place them as shown at "A" in Fig. 7, and explain to your young listener that they represent a cool lake, a hot field, another cool lake or cool woodland and then a hill. They can be rearranged several ways for different types of terrain.

Once they have been arranged, light the candle and wait a few moments for the air currents to begin to operate. Air will rise over the hot field (burning candle) and be replaced by air flowing in from the cool lake and woodland (pans of cold water) about it and this air in turn will be replaced from the air about it, some of which will flow up and over the hill (folded cardboard). After a few moments blow some smoke or have someone with a cigarette let the smoke from the burning tobacco flow over the hill, down over the cool woodland and then up in the "thermal" over the "hot field." Try changing the order of the various units for different flows of air.

If you have similar tricks that will enable the rest of the Air Adventurers to test for themselves or "pass the word along" to others or additional facts about flight, please send them in and we'll make up another "exhibition" session for all.

Are you a lone wolf Air Adventurer who wants to form a squadron? Take a tip from Harold Alexander of P.S. 21 in Yonkers, N.Y. Along with two other classmates, he obtained permission to use his school's duplicator and ran off a poster inviting interested air fans to meet with them. Poster was circulated in fifth and sixth grades. Result: we received an order for 15 membership blanks.

Sub-miniatures

(*Continued from page* 31)

repairs are a cinch.

The construction of biplanes in this size is entirely practical. Matter of fact, the addition of a second wing adds little to the overall weight. What *does* increase weight—assuming that you selected your wood carefully in the first place—is the metal parts, cement, and the necessity for using considerable weight at the nose for balance. Because of the latter consideration, it's wise to pick a plane that has an in-line engine and hence a good long nose. Also remember to keep the tail parts *light*.

15 Fifteen Famous Fighters 15

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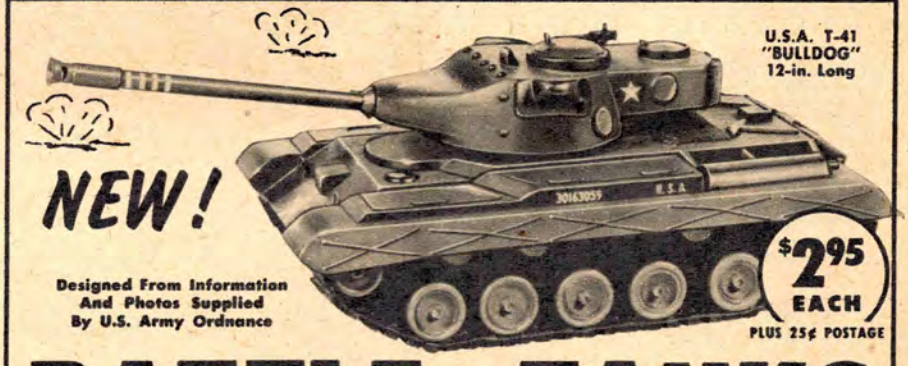

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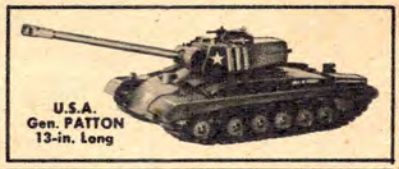

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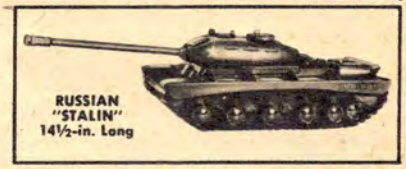

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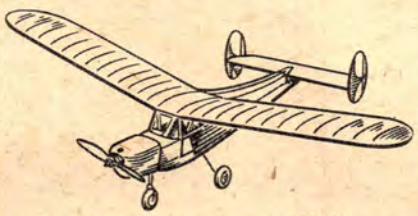
R/C at Nationals

(Continued from page 45)

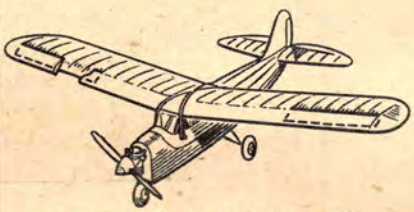
in unassisted take-offs although he actually made no take-off points this year.

To explain the five-wheel theory: there is a half-submerged bumper nosewheel which aids in landing impacts only; further back near the C.G. there is a large pair of close-set wheels recessed in the belly and fitted with radio-controlled brakes for taxi control; still further back the standard outrigger pair of wheels—five wheels in all.

A feature of this model was its unmatched accessibility; the fuselage separated full-length along the centerline, exposing all the complexities of McCullough's radio gear which starts with a standard Macnabb 465 mg. receiver. There are proportional control actuator for rudder, two-speed and engine shut-off by escapement, and elevator and wheel brakes operated by servo motor. The secondary controls were operated by pulse presence-omission relay delay circuits, transmitter being keyed by electric motor-driven pulser. This ship, the "Wizard," weighed 11¾ lbs. including 27 oz. lead in the nose for trimming, and was powered by an Atwood .49.



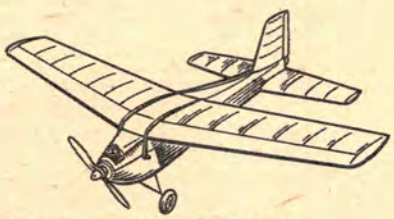
■ *Arden-powered semi-scale "Skyfarer" was one of few realistic types; used Super Aerotrol 27 mg. radio...*



■ *C.W. Evett built slotted wings; original design had compound escapement, motor control...*

At least six near identical Cub Cruisers (and several other somewhat similar ships) represented the San Francisco "Mustangs." These were said to be modifications of a standard kit; if true, the modifications must have been very extensive and it appears safe to refer to this as an "original" design. Spanning 7 ft., 4 in., the ship has 1,100 sq. in. wing area to sustain its nearly nine-lb. weight. Large Spitfire .65 engines with two-speed spark ignition were used, swinging 14/5 propellers.

So conventional is the landing gear arrangement that it is difficult to describe; an ordinary two-wheeler of average tread with axle line about even with the wing leading edge. Since the ship is capable of beautiful take-off performance, this gear must be given most of the credit. To say the least, the three principal faults in landing gear arrangement have been avoided: groundlooping, caused generally by wheels



■ *Veteran R/C man Bill Butler entered "RCMaster" kit with deepened fuse.; E.D. diesel 2.46 c.c.*

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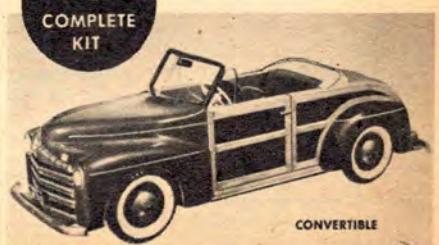

CONVERTIBLE

being too far ahead of the C.G.; nose-overs which occur when the gear is too far rearward and the awkward tip-dragging associated with poorly-arranged tricycle gears.

The Rockwood 27 mg. five-channel radio receivers used by the Mustangs might appear complex for average modelers not well versed in radio theory. E. L. Rockwood, however, claims many "experts" incur difficulties in their attempts at modifications and improvisations. He feels the outright amateur need not anticipate troubles if he simply follows directions. Advantages of the three-tube, tuned-reed Rockwood set are: long life tubes available anywhere; set is not critical to adjust and adjustments "stay put"; will operate at long range even on weak signal; transmitter batteries are fewer and last twice as long as other types; the complete reed-type, three tube receiver's total weight of less than one pound can be carried by even a small "Live Wire" model. There is, incidentally, a single-channel competitively priced Rockwood receiver on the market.

Schneider's winner made realistic, straight take-offs with tail high, being pulled off the ground by elevator control. Aloft, it utilized the elevator control to perform maneuvers others could not match with rudder only. From straight level flight the model would increase power, nose over into a clean dive, pull up into a series of perfectly round loops, then level out at the bottom of the last one. With the shallow dihedral, near scale lines and proportions plus the level flight "cruising," the Mustangs' Cub Cruisers struck a new high in realism.

Jim Walker, but for an unfortunate test flight mishap which would have completely eliminated any normal contestant, might have won the meet again. His own polished techniques have almost been taken for granted in recent years. It has been a case of Mr. Walker sometimes eliminating himself in advanced, risky maneuvering rather than being outclassed otherwise.

Howard Bonner, who favors use of mechanical devices to gain the effect of multiple-channel radio, also ran into difficulties. His new receivers, using miniature Neomatic relays and a British-made E. D. tuned-reed unit (two of three reeds being utilized) is basically a McEntee circuit published in Air Trails and employs three hearing aid tubes. The two-channel set, with mechanical devices, achieved rudder and steerable tailwheel control on one channel; elevator, motor control and shut-off on the other. Transmitter was keyed with two pushbuttons unlike the Rockwood transmitters which had a control stick for rudder and elevators and a side push button for motor control.

Bonner has lately, on numerous occasions, achieved long stretches of inverted flight. Inversion being at the crest of a loop when "down" elevator is signalled; recovery is made in a half loop upon application of "up" elevator.

Bonner's compound escapement, which eliminates sequence worries, and his air bleed motor control and shut-off were employed by quite a number of entrants. Most successful was L. D. Crisp, fourth-place winner who, at home in Indiana, flies for fun from a tiny softball field surrounded by trees, floodlights and telephone lines.

Several radio-control authorities at the National meet agreed in the opinion that the trend in radio apparatus will definitely be toward miniaturization. It will become general as soon as the military declassifies some of the new items involved. Ultimately we will have small sealed, plug-in receiving units, with relay likely separated from the remainder of the set.

Apart from the interest shown the newer "free" 27.25 mg. band sets, there was continued activity on the 465 Citizens band and the 52-54 mg. band which requires licensed operators. Followers in the latter group claim it to be best; most sets in this frequency are very sensitive, having long range and no problems of interference. William Cranford's group in California flies in this band and can operate three planes simultaneously without interference by tuning one at the bottom of the band, one in the middle and another at the top.

The popular Macnabb Citizens set now enjoys wide use. Mr. Macnabb now recom-

(*Continued on page 67*)

Radio Control NOTES from Tornado

VALUABLE TIPS

For the beginner making his first attempt at Radio Control flying and those not too familiar with engine and prop combinations.

Using any 48 to 54 inch span—wing loading up to 16 oz. per sq. ft.

ENGINES: OK CUB .099, on this engine it is necessary to reduce the venturi opening by 50 per cent. This will allow better fuel adjustment for hand launching and violent maneuvers. Set needle on rich side of peak so that in climb engine is fully at peak RPM. ARDEN 099 works well as is.

Right thrust your engine 2° to 3°—this has been found ideal.

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All speeds and altitude gains are approximate, depending upon engine condition, fuel, wing loading. The use of 1 oz. Castor Oil per pint of packaged fuels is advised to offset extra engine load of large diameter props. Use HOT Glo Plugs.
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"AT" Forum

(*Continued from page* 12)

How to Make Microfilm . . . I have a question pertaining to microfilm. First of all, I would like to know how to make the solution for microfilm, its components and the percentage of each solution to make one composite microfilm solution. Secondly, the method used to pour the solution to actually produce the microfilm sheet. What adhesive is used to attach microfilm to balsa structure? How is the microfilm trimmed after it is attached to balsa structure?

George H. Dlahy, Chicago, Ill.

● Microfilm is produced by pouring any cellulose nitrate or acetate solution on water. One workable formula consists of a tube of Duco Household Cement thinned down to the consistency of a heavy automobile oil with Butyl Acetate (ask your druggist) plus the addition of 3 or 4 drops of castor oil. Shake well and allow to dissolve overnight before using. Another mixture is pure clear metal lacquer thinned down as directed above plus the drops of castor oil. Or clear dope thinned down with non-blushing thinner plus castor oil.

The function of the castor oil is to make the otherwise brittle sheet flexible. The ratio of the amount of castor oil to the solution is determined purely by experimenting. If the sheet while drying on water shrinks excessively, wrinkles, and breaks on removal, more plasticizer (castor oil) is needed. Excessive C.O. results in the sheet being overly flexible and sticky to the touch.

Pouring the film solution on water should be done by pouring a tablespoonful of it as quickly as possible from one end of the tub to the other and striving for equal distribution during the process. Pour as close to the surface of the water as you can. Water temperature should definitely not be cold, between 70-80 degrees being O.K.

After the sheet has dried it is removed on wire hoops or bent coat hangers. Place the hoop under the film sheet and then gradually lift horizontally until the hoop is lightly contacting the sheet. Push all the film sheet on the outside of the hoop close to the frame. Then with a gradual twisting motion of the wrist bring the sheet off the water. When the remaining drops of water have evaporated, it is then ready for use.

Saliva is commonly used as the adhesive for securing the film to a framework. Simply wet the framework to be covered with saliva. Place the framework on a flat surface such as a tabletop. Then place the hoop containing the sheet on the framework. Make certain that all the wetted framework contacts and adheres to the film sheet. Allow to thoroughly dry so as to prevent warping .The trimming of the sheet is done with a hot wire heated by a candle, or with a hot soldering iron.

The only commercially prepared microfilm solution to our knowledge is prepared by Junior Aeronautical Supply Company. This is the formula used by Pete Andrews on his 32-minute model.

Fuel Consumption . . . I would like to know what the fuel consumption per hour is of the North American T-6 Texan, Fairchild PT-26, and the Stearman PT-13.

Robert Abbott, Monticello, Wis.

● T-6: around 30 to 25 gallons per hour. PT-13: around 18-15 gallons per hour. PT-26: around 18-14 gallons per hour.

Data on Arado AR 66 . . . Could you please give me information on the Arado AR 66 such as the wingspread, fuselage length and type of engine?

Dennis James Miller, Saginaw, Mich.

● Span: top wing, 33 ft.; lower wing, 33 ft. Dihedral: top wing, 3 deg.; lower wing 1 deg.; Sweep back: top wing 8 deg.; lower wing 8 deg. Fuselage length: 27 ft. 3 in. Engine: inverted, air-cooled V-8 Argus 10C rated at 240 hp at 2000 rpm.

Specs on Midgets . . . Could you please furnish the specs on the 190 cu. in. midget racer "Shoestring"? Please include the brake horsepower of the engine and the airfoil type, if these figures are available. If the specs on "Shoestring" are not available, how about Pitts' "Lil Monster" or Steve Wittman's "Bonzo"? I would also like to know if the rules for the 190 cu. in. racer allow the use of a sea level type supercharger, and if so was one ever successfully used?

Wayne M. Sanders, Green Cove Springs, Fla.

● Three-view, with scale, of Shoestring was published in our January 1952 issue. We do not have any further information on it, or the other midgets. The engine is 190 cu. in. Continental flat four rated at 90 hp. The use of superchargers in midget racers is not permitted by the rules. Sea level type superchargers have been used on airplanes successfully.

Mosquito's Bombs . . . As a hobby I have been building solid scale model airplanes for about two years. I am now working on a British de Havilland Mosquito. In the plans a summary of the data of the plane is given. In regard to its useful load it states that four 500-pound bombs could be carried. I would appreciate it very much if you would tell me if these bombs are carried internally or externally.

Henry G. Vogel, Jr., Buffalo, N. Y.

● There were over 30 different types of de Havilland Mosquito planes built during the war. One, Mark B XVI, could carry 4000 lbs. of bombs in a bulging enlarged bomb bay. It was completely unarmed and had a plexiglas nose housing the bombardier. The other, a fighter-bomber with solid nose and armed with four forward-firing cal. .30 Browning machine guns and four 20-mm Hispano Suiza cannon, carried two 500-lb. bombs, or one 1000-lb. bomb in the bomb bay and two 500-lb. bombs under the wings. It was designated Mosquito FB, Mark VI.

Engine on the MiG . . . A friend of mine said that the MiG 15 is powered by a R.R. Nene built in England, and I said it was a Russian copy of the Nene with many refinements and a great deal more power. Please let us know which is right, if either.

Don Broughton, Cleve., Ohio

● The MiG-15 is powered by a Russian jet engine based on the Rolls Royce Nene pattern. It is more powerful than the Nene.

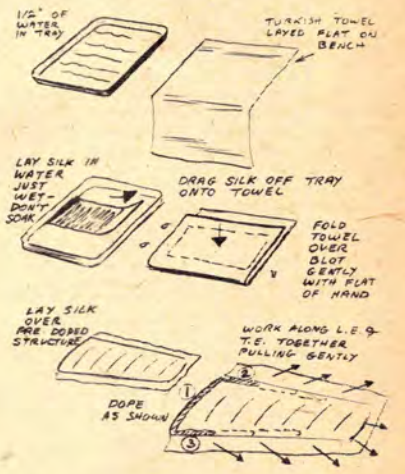
What Towed Troop Glider? . . . I would like to know what airplane was used to pull the army troop glider? Was it a DC-3? I would also like to know where I could get plans to build both plane and glider. I would like plans that are to scale with one another and in scale.

Cpl. George H. Edwards, Ft. Leonard Wood, Mo.

● The Waco CG-4 troop carrier gliders were towed by a variety of twin-engine aircraft, but the standard tow plane was the Douglas C-47, military version of the DC-3. You can get three-views of the C-47 by writing to the Public Relations Office, Douglas Aircraft Co., Santa Monica, Calif. Sorry, we do not know where you can get plans or three-views for the CG-4 troop glider.

How to Cover with Silk . . . In trying to cover the Dmeco Live Wire R/C trainer with silk, I have been very unsuccessful even after several attempts. What is the recommended procedure for covering wing and stab with silk?

John Delevuryas, Jamaica, N. Y.


1/2" OF WATER IN TRAY
TURKISH TOWEL LAYED FLAT ON BENCH
LAY SILK IN WATER JUST WET— DON'T SOAK
DRAG SILK OFF TRAY ONTO TOWEL
FOLD TOWEL OVER BLOT GENTLY WITH FLAT OF HAND
LAY SILK OVER PRE DOPED STRUCTURE
WORK ALONG L.E & T.E. TOGETHER PULLING GENTLY
DOPE AS SHOWN

● Silk is best put on wet. Get a serving tray or large pie plate. Put about ½" of water in tray. Lay out a turkish towel beside tray. Hold panel of silk by corners and drag it through water, then lay it out flat on towel. Fold towel over and blot lightly. Next lay silk over part of model and start doping down. Use fairly thick dope. Dope down one side end and then work along both sides together. Pull excess over edge gently to pull out wrinkles. Let dry, then clear dope in usual manner, several thin coats being better than just a few heavy coats. Be sure pores of silk are filled. You can see dope run through to underside of covering where pores are still open. Sand lightly between coats. Clear dope the wood structure before covering with silk.

R/C at Nats

(*Continued from page 65*)

mends 67½ V. B. supply in the receiver (formerly 60 V.) because, he says, some hearing aid cells when "new" are not up to indicated voltage. He recommends use of packs rather than hearing aid cells and also suggests raising receiver A voltage from 6 V. to 7½ V.

There is a growing use of British-made model radio apparatus. The 27 mg. band has been a "free" one over there for some time and they have had ample opportunity to perfect this equipment. Radio sets the writer has had occasion to examine and observe in operation seem to be of high quality and, even with duty included, are generally attractively priced. Two contestants, Nathan Rambo and Bill Butler, entered British E. D. 2.46 c.c. diesel-powered radio ships. This is a .15 cu. in. engine and both modelers felt it well suited to radio control use.

Duties as Contest Director prevented Dick Schumacher from competing although he flew two models unofficially. His five-footer represents optimum size in the opinion of many. Its 600 sq. in. area and 4 lbs. gross weight give it good "penetration," yet its dimensions make for easy handling. This model flew well in gusty winds.

His other ship was the only Half-A radio model seen at the meet. Spanning 42 in. and weighing less than 20 oz. total, it was Wasp-powered and was equipped with 27 mg. Aerotrol Radio and Bonner compound escapement.

Use of this latter device, because of the keying system it employs, makes it smart for a modeler to stick with it in all his ships once he adopts it. One punch means right rudder—any single punch means right rudder—two punches means left rudder, etc. It is confusing to go back to the conventional right-neutral-left-neutral sequence once the compound has been used, and vice versa.

If we cannot truthfully report any sweeping advances in radio control during the past decade as compared to the prewar exploits of the Goods and Jim Walker, it is fair to point out that during this period the number of individuals capable of "advanced" radio control flying has grown from a few to hundreds spread throughout the land. The model industry has made it easy to enter the field of radio control successfully even without knowledge of radio theory. Costs of ready-made and construction kit sets of radio equipment are priced within the reach of most model builders and there is a rapidly increasing selection of well-designed radio model kits on the market.

It appears that radio control is poised on the brink of a mushroom growth in popularity. The field has no limits. Few enthusiasts, once their feet are wet, give up radio flying for another phase of modeling. It guarantees thrills and satisfactions which truly rate it the ultimate in model aviation.

R/C Roundup

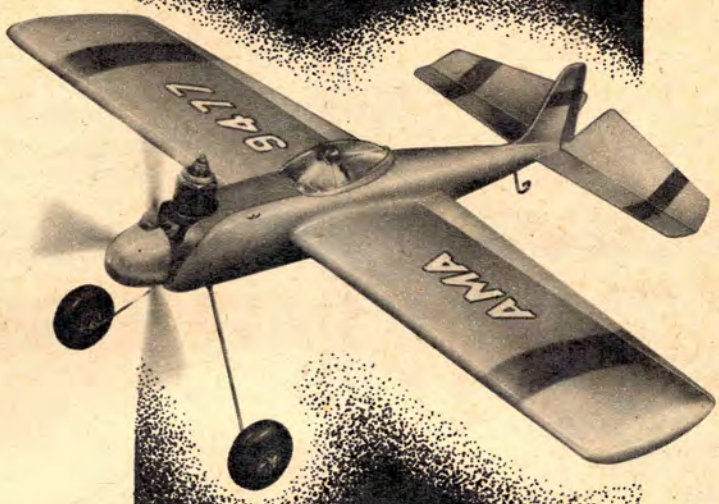
(*Continued from page 10*)

prevent a spiral dive pile-in. If control can be regained, the first pulse puts the actuator back into full operation. The contacts at the left are the receiver sensitive relay, and the entire circuit is shown in the no-signal position.

Mailbag. We have heard from flyers in several new areas this month, so let's get into the news. A long conversation with Maurice Woods of Oklahoma City settled a few problems that had been worrying him on R/C. Seems he and Ray Matthews have been flying radio in converted PAA-Load ships; Ray has recently moved to South America, leaving Maurice sort of alone in R/C. He hopes anyone in the area who is interested in radio will get in touch with him. Says they have a fine flying spot at Tu-Lakes Airport, contributed by the city. Maurice has been using Macnabb equipment with good results.

Ed Rockwood sends details of activity at the model field at Warm Springs Airport in Northern Calif. Alex (Nats Winner) Schnei-

for your pleasure...



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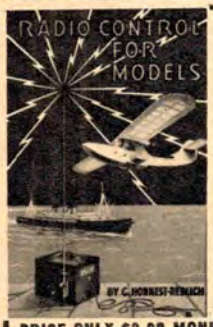

RADIO CONTROL FOR MODELS

SOME OF THE CONTENTS—"Radio Control for Models" written by G. H. Redlich, expert radio development engineer, is written in a manner that all can understand. The Author has successfully piloted a model across the English Channel via radio control, has displayed his aircraft etc. to British Air Force & military experts all over Europe. Good Brothers of U. S., Pepin of France & other experts are all represented in this book. Totals 128 pages, 14 chapters, high quality paper and excellent binding. Hundreds of new, different ideas are shown, measurement of amps, insulators, magnets, shielding, etc., all the important things you need to know to build your own set or to keep a purchased set in top operation condition. Escapements with 2 to as many as 12 operations shown, over 175 photos & circuits are given for sets, use of electric motors for control, solenoids, delayed action relays, mechanical movements, beep box used by Good Brothers, boat layout with forward, reverse, stop and half speed controls. Scaled down drawings are given for "Rudder Bug," ½ A "Queen Bee" and "Jige 213" radio controlled powered glider by Pepin of France. Complete trouble shooting information for senders, receivers etc. Here is a book you will use in your workshop and on the field with your models. Quality from cover to cover. Yours for a better knowledge of the many problems of Radio Work. . . .

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der has reduced his radio equipment to a pound in weight, and has it installed in a ship much like the Nats winner, but much slower. He's been letting many bystanders fly the ship, and has mastered low altitude flying to the extent that he loops within 25 feet of the ground. The audio tone flyers have tried flying one ship on 27¼ and another on 52 mc. with no interference whatever.

From further south on the Coast, we hear of more A.F. tone operation. John Curry has built a receiver patterned after our 3-tuber, but ending up in an E.D. three reed unit, and used to control several Bonner escapements. Howard Bonner has been using this setup with fine results; he has it fitted to his two-year-old plane, pulled along by a Fox .35, instead of the K&B .19 previously employed.

One reed controls a Bonner Compound escapement, for rudder and motor operation; the second reed is used for elevator. The third reed is not used at present. With this setup, Howard is able to do consecutive loops, inverted flight of 200 or 300 feet, real power dives, etc. Says he never knew R/C could be so much fun till he rigged up this system.

To get back to John—he has been cliff soaring a G-84 glider with Citizen-Ship 465 mc equipment, off the Palo Verdes Hills. He has made several flights of a half hour, and feels it would be quite possible to keep the ship up for two or three hours.

An old friend of the Nats R/C contests has recently been heard from; Jim Fronkier, from Coffeyville, Kans., tells us that he is still active in R/C. He gets together occasionally with Charlie Siegfried for a bit of flying. Siggie showed up on a recent visit with a little four-footer that was successfully put through its paces. A lot different from that giant he flies at the Nats! Jim would like to contact any of the R/Cers who are hams; his call is WBGR, and he and George (Proportional) Trammell get together on 3950 or 3860 almost every night for a ragchew.

From Munster, Ind., comes word that Jerry McGeorge is looking for R/C converts. He says that he and five other R/C enthusiasts get together every Sunday afternoon at the farm of Tony Grish for a flying session or, in bad weather, just a plain bull session. Tony, the Tornado Prop man, has become interested in R/C, and according to Jerry (who first got Tony going in this line of flying), has become a real expert. Tony usually flies a Live Wire, while Jerry has been doing fine with a Robot.

Though they have beautiful farm country in which to fly, all is not perfect, for Jerry says they are bothered by interference from electric farm fences. (Wonder if any other boys in the farm areas have encountered this?) Another flying spot is available, since the owner of a local airport is anxious to have the boys fly from his field. (Why can't we have such airport owners in *this* part of the country?!)

We have heard through Michael Farley of a flyer in Caribou, Maine—Ludger Blanchette—who flies a 6 ft. Flamingo, fitted with a Drone diesel engine. Rudder only is used for control. Mr. Farley himself has under construction an R/C helicopter with 2½ ft. aluminum rotor blades. It will be driven by a Forster .99 engine, chosen because it gives relatively high power at low rpm. We hope to have photos of this 'copter as construction progresses.

The Norwood (Mass.) Society of Model Engineers is heard from again through Al Trefethen. He sent the news of the joint R/C meet described later in this column, and also sent the pic of a ship that Lou Andrews has been trying out for radio use. Al mentions that several new R/C members have joined his society, but he is looking for many more. He has recently been elected President.

Technical Topics. We have always considered the Rudderbug a very docile and stable R/C ship. It is, too, but like many other models, if you misplace the C.G., it gets real ornery. Walt Good writes of a Bug he saw, which, after having been spiraled to the right to lose some altitude, went into a straight down dive; neutral was given with no results at all, and meantime the ship was roaring earthward with no rotation whatever. It even appeared to be slightly over on its back, but with no inclination to

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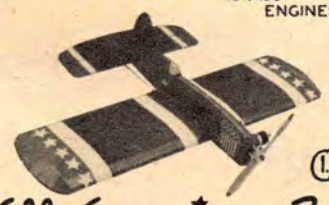

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continue into an outside loop.

Left rudder was then given, and the ship very slowly pulled up its nose with only the slightest amount of rotation, just as though it had received up elevator. Fortunately, it was very high, since it lost an estimated 1000 ft. in the dive. Walt theorizes that since the plane was an expert construction job, with no warps, and wing and tail angles as specified, the trouble must have been in the fact that the C.G. was at 38%; he strongly advises that this be kept no further back from the leading edge than 25 to 30%.

Bill Effinger advises that the trick we mentioned in this column in the December issue, to get recalcitrant gas tubes to work in the Berkeley receiver, may be simplified even more. They have found that a ceramic fixed condenser of 7 mmf., hooked up from plate end of the tuning coil to filament, will take the place of the variable capacity we described, and will be about right for most any gas tube. Retuning of the slug will be needed after the new condenser has been added, but will not change thereafter, when tubes are changed.

We recently had a spell of trouble, the net result of which was a spin-in to the right several weekends in succession, and which finally forced considerable repairs to the old Brigadier. We fly with proportional control and a three tube receiver, so arranged that full signal gives left turn, no signal, right. After a lot of detective work, it turned out that the trouble was caused by electrical "noise" produced by dirty joints in the rudder pushrod, and the actuator arm. Possibly the actuator bearings also contributed.

The receiver picked up this "noise" when the rod was vibrated by the running engine in flight (it wouldn't do so when the plane was held in the hand with engine running); the relay tube is controlled by noise from the detector; with signal, this noise stops and left rudder should result. However, the false electrical "noise" caused the rudder to swing to the right, even though we had full signal on. A simple bonding of the offending joints with flexible wire cured the difficulty completely. It's interesting to

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note that we had been flying the ship for two seasons with no trouble from this source.

Frank Schmidt had difficulty with this type of receiver, though the "noise" came from other sources. He cleared it by using fibre insulation in his rudder escapement control system. Fiber was used between the metal at both ends of the pushrod, his main source of noise being the contact between the escapement crankpin and metal fork at the end of the rudder operating shaft.

Commercial Items. After all sorts of production and procurement headaches, the Control Research two-tube receiver is finally being shipped. Sold through North American Model Products (9802 Warwick Rd., Hilton Village, Va.), this printed circuit outfit sells for $24.95, complete with two RK61 tubes, but less relay. For those who wish to build this sort of receiver themselves, complete instructions may be had from Control Research (P.O. Box 9, Hampton, Va.) for 10c. The receiver gives a current change through the relay of 0 to 2 ma. or more, idles at about .5 ma., and is very sensitive. It comes with a plug-in mounting base, which may be permanently attached in the plane.

Crystals for 27¼ mc. use may be had from Precision Crystal Lab. (2223 Warwick Ave., Santa Monica, Calif.) in two types. One, specially processed for use on this frequency and marked 27.255, sells for $7.00; one marked 9085 mc., and which will triple into the R/C frequency sells for $6.25. We have tested samples of both crystals and find them very active. Good results were had in the Annual transmitter, and the various 3A4 circuits we have printed in this column. We could find little difference in the two types, though the one marked 27.255 mc. did give a tiny bit better output. Both types are in the FT243 holder, and are cut and processed by Precision themselves.

An interesting new scale kit is being worked up by Berkeley Model Supplies (West Hempstead, N. Y.), which, though not designed primarily for R/C work, will have real possibilities for such use. It is a very close scale copy of the Army Helioplane Liaison design, and has a span of 41" with large wing area, due to the wide chord. The big Helioplane has no struts, large dihedral, and considerable downthrust, all features copied in the Berkeley model.

It also has large flaps, and Berkeley hopes to work out means to operate these flaps—possibly in conjunction with engine throttle—to give really spectacular performance.

Another R/C supply firm has recently entered the field of catering to modelers. Electronic Equipment Service (P.O. Box 681, Presque Isle, Me.) is now supplying a 10,000 ohm sensitive relay for receiver use, at a cost of $3.95, C.O.D. This concern also has a thermostatic switch for operating auxiliary controls in the plane. They expect to produce kit and completed receivers in one and three tube circuits, as well as a Beep Box of the relay type.

—HOWARD G. MCENTEE

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Western

(Continued from page 59)

ever done with a prop-driven job. Need we add that the Nats stunt winner John Lenderman flew in two stunts events and won both of them?

Sportsmanship again reared its completely wonderful head, this time in a gesture of quick thinking which we consider magnificent. Vernon Hoshimoko of the Flying Kilroys found his dolly stuck to his jet job after take-off. Rather than take a chance that this dolly might fly off onto the crowd, he dorked the ship, completely smashing it and his engine. Vern, our hats are off to you. The decision you made we know was a hard one, one which a lot of us would do well to bear in mind—no ship is worth even the slightest accident to a spectator or another modeler.

From Tucson comes word from Vern Walters that Phoenix had a towline and rubber contest. Vern has built a new long glider, says it sure works swell, good enough to win the contest. Says Harry Robertson flew an El Nordo II to second place, missing all the thermals.

The San Diego Aeromodelers now have a 60-ft. circle of asphalt and a 20-ft. square for free flight take-offs. Sundays finds the fellows using them in an unending stream.

A recent trip to the Sepulvada Basin showed a great deal more R/C flying than we had ever witnessed before. Along with such standbys as Bill Butler, Colby Evatt and Wayne Schindler we found two well-known stunt pilots, Doug Spreng and Bob Palmer, both flying Half-A jobs of Bob's design using the Macnabb 465 mc. receiver and transmitter. The ships were small, silk covered and had those high-revving Royal Spitfire .049s doing the hauling. The flights we witnessed were all good.

Wayne had a slightly modified Navion which he had out for the first time, Torp .29 up front, engine and rudder control; flew good too, a little overpowered, it seemed, though it might be possible that better trimming will smooth out the galloping flight. Wayne had a new six-meter receiver using a 1S4 which was very light and small, slug-tuned coil and two RF chokes, with one of those miniature relays. It looked good.

A slight distance away from this beehive of activity the Thermal Thumbers were having their annual team Wakefield contest. Two weeks before they had an elimination meet to see who would be on their team, and as we understand it, it ended with only four modelers managing to get in all three flights. Be this what it may, it was a well-known fact that if one was to win he would have to beat the Cloud Dusters.

The contest started off early with Manny Andrade and Joe Bilgri among the first off, doing 5 minute max's easily; John Lenderman also showed that there was nothing to it. At the end of this round the times were close, so close that only seconds separated the two top teams. The second round produced two men with a total of ten minutes, John Lenderman and Joe Bilgri, with Ed Slobad and Manny Andrade tramping

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on their heels. At the end of this round the Cloud Dusters had a comfortable lead over the Thermal Thumbers, but Manny hung his long job up in a tree.

The third round produced all the surprises. Joe Bilgri decided to fly his gear job. The flight ended with a broken wing from some 200 feet up after 3:45; the ship careened badly due to a possible phugoid oscillation. The timer lost the ship somehow and turned in a four-minute plus flight. Then the gripes began. Someone produced a rule book which said parts could not be dropped in flight. When it was explained that the intent of the rule was for deliberate dropping of parts in flight, some real bickering started. When the smoke had cleared the flight was thrown out and Joe given another attempt which in itself is in contradiction to the rules.

In our minds the flight should have been allowed to count, or if not he should not have had another attempt. The ship, though, wasn't hurt much. During this period of yakking the Thermal Thumbers proceeded to take their flights regular as clockwork until they had them all in. Manny, whose ship was still in the tree, brought out his new gear job only to pop one of the motors, whereupon he then took off for another try at the tree'd job.

Joe brought out his long job and since they needed only 15 seconds, proceeded to wind up halfway and do close to two minutes. While he was out chasing the times were added up again—and they found they now needed 28 seconds. That did it. The fellows sat down and 15 minutes and 10 totals later it was announced that the Dusters needed only 6 seconds.

The Dusters all got together and managed to salvage enough parts from Manny's gear job to fly it on one motor, but since the ship would have been underweight without the second powerplant, it went along for the ride with the gears tied down. Sad to say but about four seconds after launch the two motors wound together and the prop stopped and folded, the ship diving into the ground. The time: 6.4 seconds, barely enough to win, but they did.

Quite a few of the contestants were using a new covering material called condensor paper which was very light in weight and non-porous, a good combination since it didn't require much dope. This material did not prove to have any strength, though, so most of the fellows have discarded it for plain or superfine Jap tissue.

A majority of the modelers at this contest had two ships—one long and the other geared. It was quite something to see the old standby free wheelers like Lo Salisbury and Ed Slobad using folders. Prediction for next season: gears with lots of rubber and folders, climbs of 400 to 600 feet and the guys who get 3 flights that are consistent being "it".

The Bakersfield Semi-Annual was very well attended, having over 140 entries. Old-timers were all over the place, most of them from the San Valeers, now that Paul Gilliam is back. The boys from Santa Barbara were there with the Amazons and their tail take-offs which, by the way, caused a lot of comment. Highlights included Jack Oxley's 1500 square inch job, Lew Mahiew's new long Zeek, Fran Uyematsu's slightly modified Cumulus which could climb as high in 10 seconds as most other ships could in 20.

The Bakersfield Club members didn't fly but concentrated on running the contest. Clint Merrill who was C.D., stated, "We prepared for 100, hoping we would get 75, and instead had over 140 entries, quite a big contest for this time of the year."

Many a contestant was seen to shake his head in wonderment when Marion Shirley took out his C job and proceeded to get in some private flying for himself after timing all day. F. L. Swaney's comment after Jack Oxley's 1500 square job had dorked: "Don't get excited, fellows, that wasn't an earthquake, just Oxley's ship piling in."

Lew Mahieu's new ship is longer and bigger but has the same distinctive outlines of the other Zeeks. In contrast to their rolling flight the new one is almost straight under power, going up at a terrific rate. On his first flight the wing came off at about 200 feet up under power, and the speed was so great that the ship, less wing, continued on up for almost 400 feet before

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going over and in. The amazing part of this story is that Lew made official flights after this happened. We don't know how he did it.

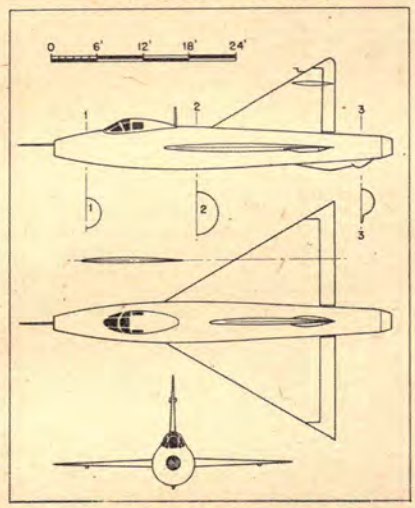
The weather at this contest was wonderful, even Half-A jobs were clocking close to ten minutes all day long, but strange to say 26 minutes was high time. Very consistent times were the order of the day.

Edith Downs writes that the Tucson Thermaleers will hold their big contest on January 24th and 25th. All regular speed events will be held on Saturday, with the exception of jet. Sunday, all classes of free flight gas plus Half-A PAA-load. Hand launched glider, towline and rubber combined with a six minute limit. Also jet, combat, flying scale (U-control), stunt. They have the following events for Juniors: stunt, speed (handicapped), Half-A free flight and ABC combined. Edith says they have 56 engraved trophies and 34 medals already.

The Tucson Thermaleers sure put on a slam-bang contest last year, so we can expect the same this time; it's well worth your while traveling far to attend.

—DICK EVERETT

CONVAIR XF-92A



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Cub .049X

(*Continued from page 46*)

dia., .27 oz. 6. Crankshaft: steel-hardened and ground, .218" shaft, .125" crankpin, .15 oz. Drive washer: aluminum, 9/16" dia., .03 oz. Propeller washer: steel, 15/32" dia., .03 oz. Propeller screw: steel, 5-40 N.C. thread, .03 oz. 7. Cylinder gasket: copper, .005" thick. 8. Tank cover: aluminum, 1 1/32" dia., .04 oz. 9. Rear cover gasket: vellumoid. 10. Cylinder: steel, .420" dia. x 15/16" long, .34 oz. 11. Needle valve: steel and aluminum, 1/16" dia., .02 oz. 12. Glow plug: steel, 1/4-32 thread, .10 oz. 13. Glow plug washer: copper, .01 oz. 14. Cylinder head gasket: copper (3), .005" thick. 15. Piston: steel-hardened and ground, .420" dia. x 13/32" long, .10 oz. Wrist pin: steel, .110" dia., .02 oz. Connecting rod: aluminum, 23/32" long, .02 oz. 16. Cylinder head: aluminum, .08 oz.

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Engine Data

Performance. Bare weight less tank: 1.38 oz. Propellers: 6/3 Cub, 11,800 rpm; 6/3 narrow blade wood, 12,100 rpm; 5.5/4 plastic, 13,700 rpm; 5.25/4 narrow blade wood, 15,100 rpm; 5/3 wood, 17,200 rpm. Fuel: OK Cub. Fuel level test: 7½" at 13,700 rpm.

Design Data. Displacement: .049 cu. in. Class: Half-A. Stroke .360 in. Bore: .420 in. Stroke bore ratio: .857. Compression ratio head: 6.0. Compression ratio base: 1.44. Port area intake: .0234 sq. in. Bypass: .0161 sq. in. Exhaust: .0513 sq. in. Ignition: OK glow plug.

Construction Features. Bearings: crankshaft, hardened steel on aluminum: crankpin, hardened steel on aluminum; wrist pin, steel on aluminum. Square rotary valve for better fuel intake and improved carburetion.

Dope Can

(*Continued from page 54*)

trophies and prizes would be awarded. In this way he feels we would get a caliber of contest that would well merit the title of World Championship and one which would provide an opportunity for a really international get-together on all subjects of aeromodeling—something that has never been offered to date.

Under the present separate system so much time is taken in travelling for the separated series of one or two day contests that a combined meeting with a larger attendance lasting a few days longer seems considerably more logical than the present system with its attendant wastage of both time and money.

Mr. Rushbrooke requests that we publicize his suggestions, which we are most happy to do. He writes, "It is very evident that the time is rapidly approaching when something of this nature must come to pass. The Wakefield is, by virtue of its long standing, the most attractive contest in the annual competition program, but it should not allow us to be blinded to the other phases of the hobby and each Championship event should have its fair share of attention.

"I am pleased to say that the F.A.I. is becoming increasingly sympathetic to this suggestion and I have already proposed that the S.M.A.E. should obtain sanction for starting a series in England in 1953 which is, also, of course, Coronation Year."

U. S. Position Shaky. What is the policy of the Americans towards an all-inclusive International Modelplane "Olympics?" Well, we just don't have any policy. Each year a small band of enthusiasts tries to scrape up enough contributions, mostly from the model industry, to send a Wakefield team abroad. There is no provision for coverage of the major control line, free flight or glider events, although occasionally an American Wakefield team member manages to detour on his way back home and take in one of the other types of events on the Continent. But it seems to us that the time is long past due when we should sit down to resolve a number of unanswered

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questions which have been hanging fire ever since war's end. F'instance:

Do the American model builders want to be represented by teams in the international competitions? We assume the answer is a resounding "yes," but if it should be "no" that would simplify matters all 'round. Do we know the sentiments of the U.S. flyers in this regard? No, they've never been polled. Why not? Nobody knows. Could the A.M.A. get a vote on this matter? It certainly could. Should it? Well, salaried officials should not spend their time, nor should funds be used for such purposes unless it's part of the official Academy program. Who develops the A.M.A. program? The Executive Council which is guided by the wishes of the individual members.

A policy and program must be set up for international representation by the governing body for American aeromodeling. As things stand now U.S. participation in overseas "international" events is pretty much a hit or miss affair—with the emphasis on "miss." If Academy licensed flyers want teams in a world-wide Model Aeronautical Olympics, then we think they will favor setting aside a portion of all license fees for team expenses.

Certainly it will be to our advantage to support the English plan to combine all major international cup events—if for no other reason than to save expenses!

F-89 Plans. Northrop Aircraft is offering some crackerjack plans to enable modelers to make a nifty solid model of the Scorpion. Five detailed views show both fuselage sides, top and bottom views and the front view. Building instructions are in step-by-step form and include sequence photographs. All this for absolutely *free!* Just drop a note to Mr. Al Cline, Director of Public Relations, Northrop Aircraft, Inc., Hawthorne, Calif., and ask him for an F-89 plan as mentioned in Air Trails. Be sure to print your name and address. Our guess is that if you want extra copies for other members of your club a request on your club letterhead will bring 'em.

Old-timers Tire. Sad news from the New York Aeronuts, famous club in the East which once boasted of such members as Frank Zaic, John Young, Carl Goldberg, etc. During the past season club members took 15 places at various local meets, but—get this—the majority of wins were copped by the younger set (15 to 18). Gary Garab, publicity man for the Aeronuts, says the "old Pros" finally realized that they were getting too old to chase free flights.

Aeronut victories, incidentally, were racked up in U/C stunt and combat, free flight gas and rubber, PAA-Load and beauty. Gad, man, the idea of an Aeronut flying control line! Well, times sure do change. But we imagine some of the older members will return to the fray when the '53 Nationals get underway with indoor flying at one of the Navy's Lakehurst, N.J., airdocks on July 27. Careful, there, Grandpaw, don't spill the microfilm solution on the bath mat.

New set of officers for the Aeronuts: Artie Stein is president; Hal Montesi, veep;

(*Continued on page 79*)

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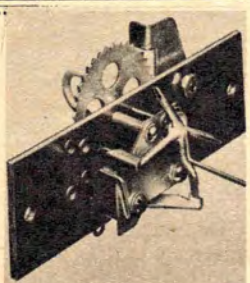

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Originally an Air Trails model, "Smoothie" is a prefabbed kit by Henry Engineering Co. Design is by Bob Palmer, noted contest flyer. With flaps, the model has 501 sq. in. of wing area; span is 52 inches. Finished weight is about 32 oz. Henry suggests a Veco "29" or "31" engine for power — naturally.

The "Sea Hawk" speedboat is Scientific's newest addition to its boat line. Designed for Half-A engines, craft can also be powered by a miniature electric motor or CO_2 engine. Price of $2.50 includes brass housing and propeller, rust-proofed threaded shaft, 12-in. carved balsa hull. Prefabricated.

SEA HAWK

BONNIE BRIG

"Fair American" was a Revolutionary War brig; this copy available in kit form from Model Shipways is based on a model in Naval Academy Museum. Hull is 16½ in. machine carved hardwood. The $24.50 kit includes special fittings, wood parts, cordage instructions and three plans by John Stevens.

The Aero Gloss Division of Pactra Chemical Company is offering the Aero Gloss Plane Kleener in half-pint cans for 50¢. Plane Kleener is designed to remove gum, castor oil, dirt and all fuel residue from models after flying. It also is used for cleaning inside and outside of motors. Will not affect dope or finish.

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NOSEY

The new Blue Tip flywheel spinner is described as a balanced featherweight flywheel by Sherwood Sales Co. Self-aligning to motor crankshaft; increases power and rpm's. Available in 1 inch to 2¾ inch diameters. Complete assembly for Half-A engines is $2.40; for larger motors, unit is priced at $3.50.

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A "must" addition to every airmodeler's library is the new 1953 edition of the Air Trails Model Annual. This year's issue is more informative than ever. Sells for 50¢ by mail to U. S. and Possessions, 60¢ to Canada and $1 elsewhere in world. Big feature is detailed article on how to start a model club.

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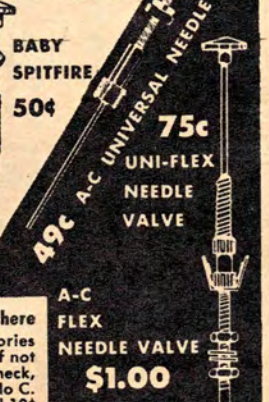

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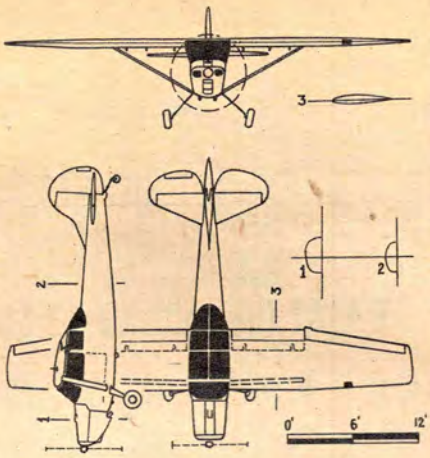

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253A—Black Tiger control line stunt; Amazon Free flight.

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R101—Radio control special! McElwee's Robot; plans for building your own receiver and transmitter for 27 mc; directions for constructing a Beep Box.

1252—Control line flying scale trio: F-51, Spitfire and Messerschmitt 109E.

1252-A—Shulman's Lethal Lucy stunt model; Del Gatto's Lightning Half-A free flight.

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952—"Shoestring" U/C; Clough's A/2 helicopter; Little Sport F/F; plus half-size three views of Bilgri's record holding "Dottie" hand-launched glider.

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(*Continued from page 75*)

Sid November, contest director; Stanley Haberman, treasurer and Bob Mangum, secretary. All correspondence should be addressed to Mr. Garab at 12 Fairview Place, Brooklyn 26, N. Y.

R/R'er for U/C. R. E. Coats of the Chicago, Milwaukee, St. Paul and Pacific Railroad Co., Janseville, Wis., wants to put in a plug for a new club in his parts: the Janesville Model Club which has just celebrated anniversary #1. Group consists of 15 good, steady members of all ages interested mainly in stunt and combat with a couple of radio control enthusiasts thrown in for good measure. The JMC hopes to get into contest work during the coming season. Mr. Coats, club pres., sent along a snapshot of his latest creation: twin fuselage stunter, original design, two Fox .35's, 5.5 ft. wing, 805 square inches, 6 pounds ready to go, 75 to 80 mph with Rite Pitch props. Performs well on one motor, says R.E.

"I thought *you* disconnected it!"

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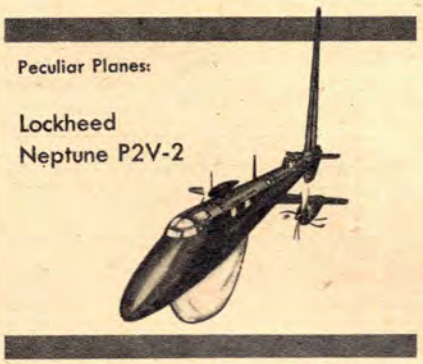
While every precaution is taken to insure accuracy we cannot guarantee against the possibility of an occasional change or omission in the preparation of this February 1953 index.

Foote Turns Author. Donald K. Foote, west coast designer who made quite a mark for himself with his Westerner job, has written two new books on modeling which are very well done. These are "Aerodynamics for Model Airplanes" and "Model Airplane Engines." Both are published by A. S. Barnes Co., 232 Madison Ave., New York 16, N. Y., and both sell for $3 each. Don is well qualified to handle these subjects; he started building back in 1922. Took engineering at the University of California. He has held five national endurance records and amassed a sizable collection of trophies.

Versatile Club. Flying both big planes and models, members of the Norwood, Mass., Society of Model Engineers, represent a good cross section of American modeling. The N.S.M.E. is planning quite an extensive program for the coming season with some sort of a meet every month. Members fly all types of models and specialize in Wakefield, Jetex and radio control categories in addition to the standard C/L and F/F events. Their flying field is the old Canton airport; members as well as the owners of the field are covered by third party insurance. Flying activity goes on all during the winter months as well as the summer. An active member is Lou Andrews, noted stunt winner and professional model designer. Lou's latest stunter as reported by Society members looks much like the Continental racer, Shoestring, with a tricycle gear.



N.S.M.E. officers for the coming season are Albert L. Trefethen, Dedham, pres.; Lee Fray, Roxbury, veep; William Orphan, Norwood, sec.; Paul Chatfield, Canton, treas. Senior advisers are Fred Bellows, Sharon, Jack Dunn, Norwood, and Cyril Tourtelotte, Walpole. Society headquarters are at 163 Oakdale Ave., Dedham.

Hang On To Your Hats! Edward N. Smith, Jr., of Seattle, Wash., appears to be a modeler with a very fertile mind. He's a scale model fancier but that doesn't stop him from pondering the problems facing fans of other events. In a very lengthy epistle Ed discusses the problem of judging flying C/L scale models. He feels that in the case of military aircraft the big bombers in miniature should fly high around the circle and drop bombs on a target. You get extra points if you hit same. Low level bombers drop bombs close to the deck. Fighters gyrate, etc., etc. All good thoughts. But then he turns to combat! Suggests combat be flown with 2-man teams—four men in the circle. One team has red streamers, the other white, let's say.

We're not sure the balsa trees grow fast enough for an event like that!

F.A.I. Rules. Harrison F. Wood of Harrisburg, Pa., asks us for a copy of the international (F.A.I.) rules governing record trials for all types of models. This info, Harrison, is on file with the Academy of Model Aeronautics in Washington. HFW says the categories sound simple and the records fairly easy to better. True. But the big stumbling block is the elaborate equipment and procedures necessary to set records. Just ask the A.M.A.

Speaking of F.A.I. marks, Harold deBolt sends along data on the Dmeco "Sportwing" kit model which was flown by Dick Wilson of Lockport, N. Y., to four new international marks. As an R.O.G. flying wing it set a record of 72.5 mph with an Elfin .15 engine. Equipped with drop-off water dolly and flying as an R.O.W. ship, the craft broke existing Russian-held records with the following performances: 62.9 mph, flying wing R.O.W. with Elfin .15 engine; 85.3 mph F/W R.O.W. with Fox .29; 84.3 mph, F/W R.O.W. with Fox .35. Taking engines ranging from .15 to .35 off the water on droppable floats was quite a feat.

Help Needed. The Louisville, Ky., ABC Model Club which has a fine flying site, is about to lose same. Bill Fischer, secretary of the Kentuckian Model and Hobby Association, Box 1253, Louisville, is assembling facts and figures on how other communities have provided flying facilities and what types of civic or business outfits have sponsored the model ports. Bill is going to put all this info together in booklet form which should make powerful ammunition for all groups in lining up flying facilities.

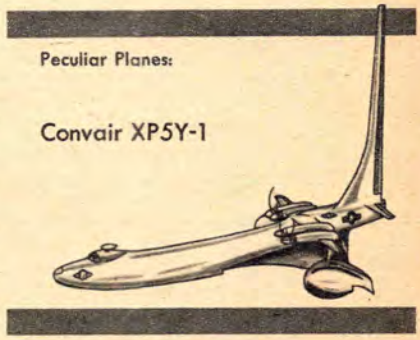
So—if you can provide friend Fischer with any information on how your club secured a flying site with the assistance of commercial or civic officials, drop him a line right away.

Mail Box. Robert L. Seaton, RR #2, Box 32A, Fredonia, Kan., writes, "Thanks for everything and keep the Dope Can open—it smells good." Guess we'd better not comment. He does say that he has a lot of full-scale aviation books he'd like to swap for large engines or kits for same. Especially wants a Pacific Coaster kit. Mrs. Seaton would like to correspond with other modeling wives.

Clifford D. Schulz says that although Julesburg, Colorado, is a small town of but 2,500 population, he and a friend have lined up more than 40 enthusiasts as potential members of a soon-to-be-established club. All are 20 or older. Wot's the matter with the youngsters, Cliff? He'll be interested in the lengthly article on club operation in the 1953 Air Trails Model Annual which appears on your newsstand next month. If there are any residents enthusiastic about model planes that Cliff has missed in Julesburg, his P.O. Box number is 102.

The Model Airplane Doctors of Easton, Pa., meet at the Easton Moose headquarters, 4th Street. New officers are Ray Primrose, pres.; Ray Volkert, veep; Dave Hester, sec.; Fred Williams, treasurer. For data on the club contact Dave at his home —720 S. 23rd St.

From Sonjin, Korea, William F. Wild of the *U.S.S. Walke* imparts some info on Japanese modeling. In a word: terrific! "I have been greatly surprised at the models," he writes. "I thought they would be out of date and crude. Instead they are beautifully built and very neat in appearance. I wouldn't be afraid to enter any in a big contest. The Jap modelers are not so strong for stunt and speed as they are for scale. Most of their scale planes are either Japanese warplanes or Navy carrier based planes, but they are all beauts.



"They also have a wide selection of model engines which range from the .049's to .63's. I have purchased an O.S. .29 which turns close to 11,000 on a 9/6 club. The wood they have over here is very light but stronger than our balsa. I believe they call it 'cherry wood'."

Bill is a member of the Circle Kings of Compton, Calif. He was disappointed not to see any fellow CK'ers in the winners' photos of the Nats.

From Denmark writes Kurt Kjellander, Oesterbrogade 10, Nykoebing Falster. Looking for a pen pal. Writes very well in English. Is much interested in control line stunt and team racing, also free flight.

Berkeley's RADIO CONTROL

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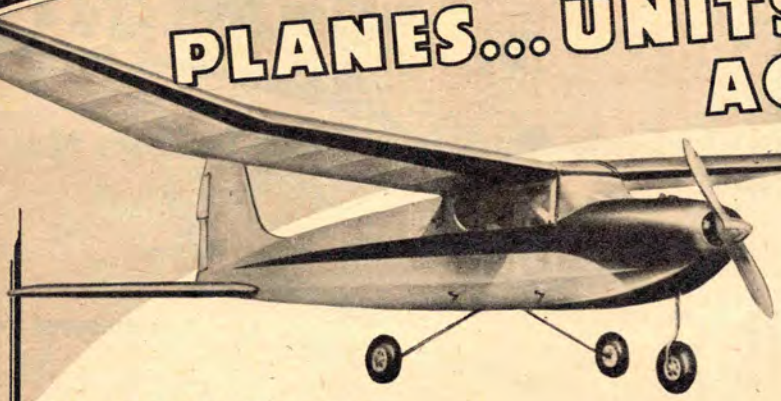

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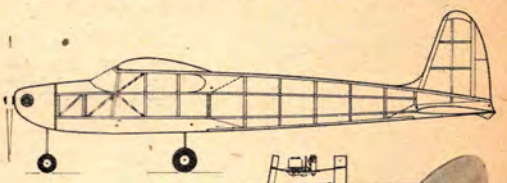

Newest in our line of Radio, PAA-Load designs, is this model by Henry Struck. Radio Chassis including batteries is removable as a unit. Split rudder tab for separate trim adjustments. Clip-in prone engine mount, tri-cycle gear.

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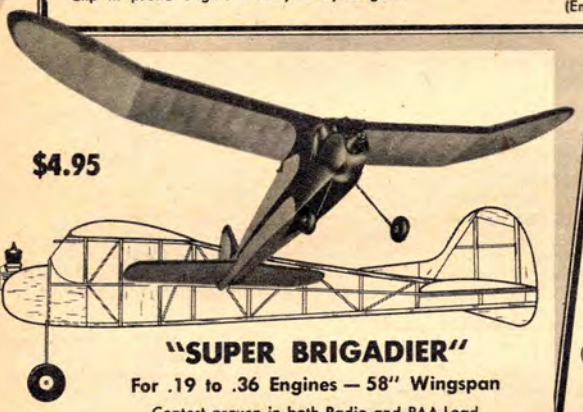
Radio Chassis



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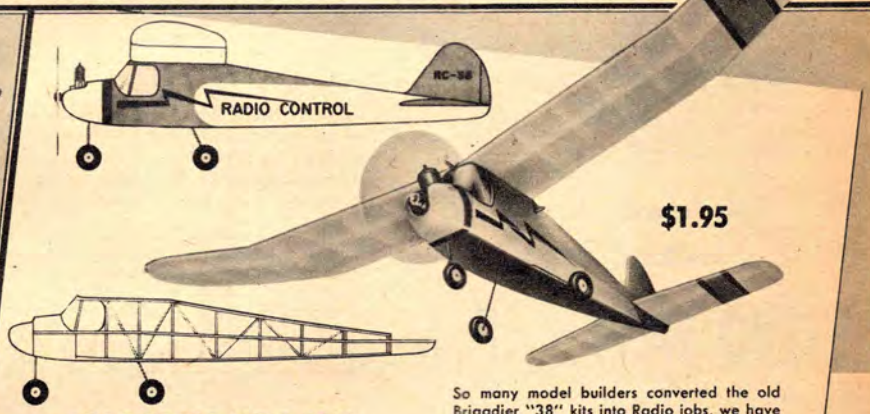

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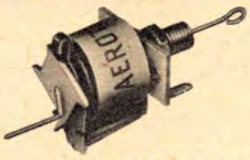

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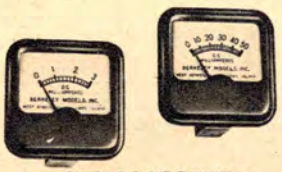

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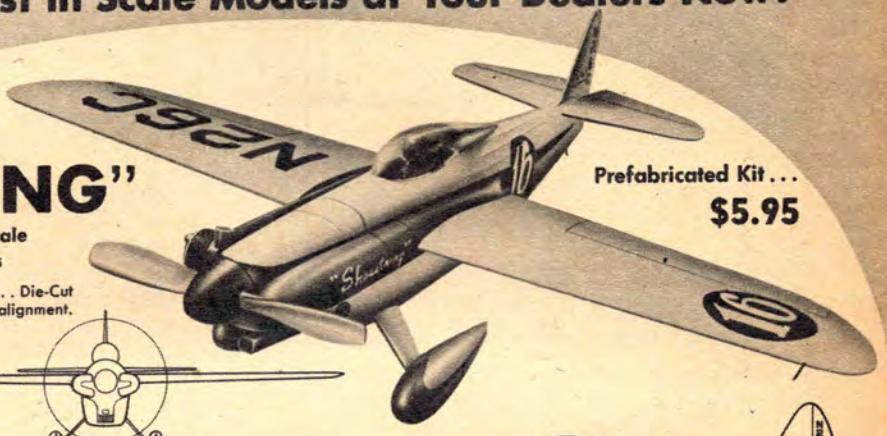

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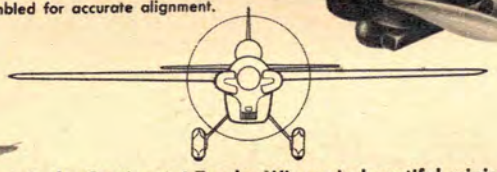

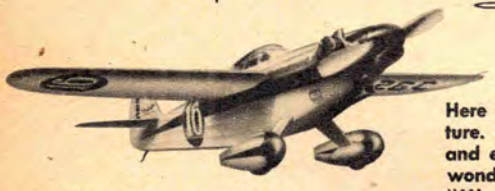

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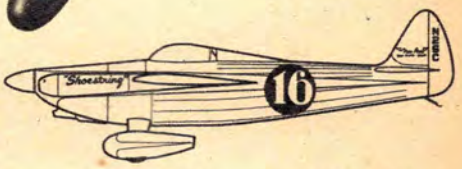

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Variable Camber Wing for Two-Speed Radio Control Flying!

Here is the model designed to use radio control devices that will be available in the next few years. The Helioplane is the first model that permits the use of the scale flaps giving true two-speed flight.

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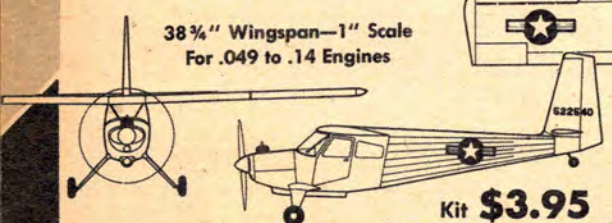
Slotted flaps may be depressed 10 degrees for Free-Flight, depressed 25 degrees for slow speed radio control flying; or raised 5 degrees for high speed flight.

38¾" Wingspan—1" Scale
For .049 to .14 Engines



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With a large prop and full span flaps, the full-scale "Helioplane" can take-off with full load in 300 feet, maintain level flight at 30 m.p.h. Top speed is 150 m.p.h. Perfect for model work, you will hear more about this amazing airplane in the days to come.

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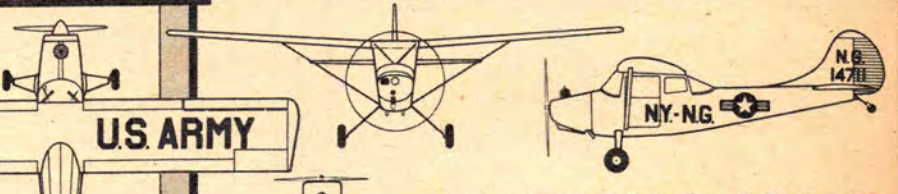
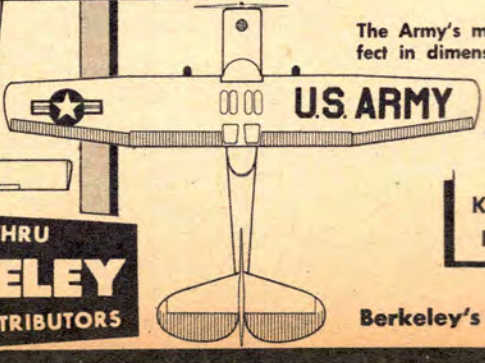
2 — Free-Flight Rubber Power	.035 to .049 Engines—Free-Flight
3 — Control-Line Gas Power	.049 to .099 Engines—Controline



The Army's main Liaison plane in Korea — perfect in dimensions for Free-Flight Model flying.



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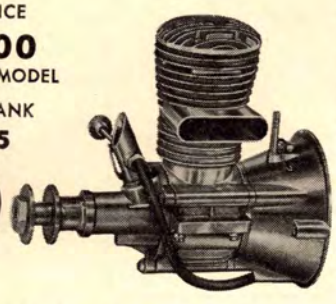
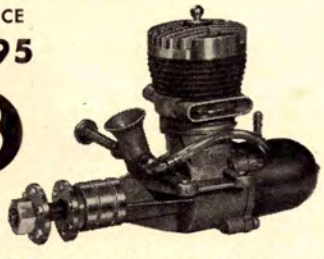


We Will Continue to Make Our Famous Atwood Triumph '49's and '51's

The '51 holds the Official World's Speed Record for 100 meters. These are available, however, only in limited quantities.

LIST PRICE
$14.95

3



We Will Continue to Import The Sensational Japanese OS "29"

—because of its superiority in the field. Develops ½ HP at 15,000 rpm's. A quality engine throughout. (Watch for the new .099 and .36 models to be introduced at the 1953 M. I. A. Trade Show.)

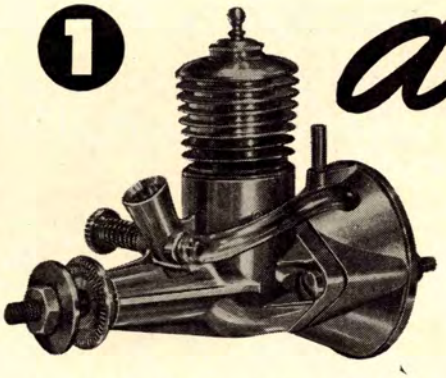
"An Atwood Engine Will Never Let You Down"

See Your Hobby Dealer For These New Products

After His 20 Years of Designing and Manufacturing Trophy Winning Model Airplane Engines—Based on a Keen Personal Interest in Competitive Flying—We are Pleased to Announce—

THE NEW 1953

1



Atwood .049

F/F—**$5.75**
U/C—**$5.50**
U/C COVER **35¢**
INVERTED TANK **65¢**

- **A More Powerful ½ A Engine that's Really Hot!**
- **An Engine More Adaptable to a Hobbyist's Needs**
- **An Engine With New, Different, Improved Timing—Larger Crankshaft and By-Pass Area**
- **Bore .420—Stroke .360—Develops up to 18,000 rpm's with Standard ½ A Props**

4 ***This Is Our NEW FACTORY***

Where Atwood engines will be manufactured in the future. It's a modern, pleasant, well-lighted plant in Montrose, California... which you are invited to visit when in the vicinity.

5 ***OUR NEW NAME*** Combining our manufacturing and importing activities, will be

ATWOOD MOTORS

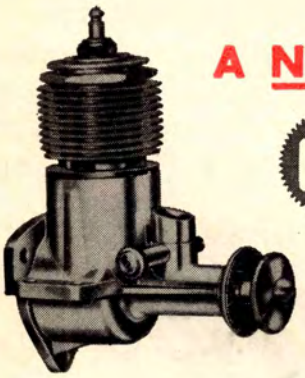
3716 Park Place, Montrose, Calif.

announcing 2 NEW OK CUBS

For PRICE, POWER, and PERFORMANCE

15TH ANNIVERSARY OK 1937 × 1952

A Complete Line of PROVEN Miniature Engines and Accessories



A NEW DISPLACEMENT!

OK CUB .14

Produced at the request of top plane designers! Opens an entirely new field for the hobbyist. A light-weight engine with the extra power so often needed. For free flight, control line and radio controlled flying.

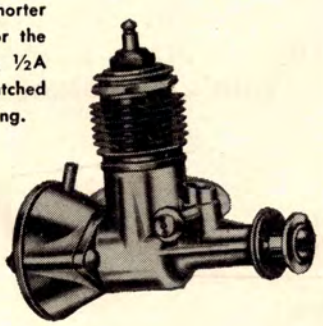
CLASS A

Displ.	.149	RPM	3,000 to 15,000
Bore	.600	Weight	2¾ oz.
Stroke	.530	Price	only **$8.95**

A NEW CUB FOR THE EXPERT!

OK CUB .049X Combination Package

Companion to the famous .049 Cub. Provides higher output due to shorter stroke, larger bore, lighter weight. Designed for the advanced hobbyist. The top performer in the ½A Class. Package includes assembled engine, matched prop, extra rear cover, fuel tank, neoprene tubing.



CLASS ½A

Displ. ..... .049
Bore ..... .420
Stroke ..... .360
RPM .. 3,000 to 15,000
Price .. only **$6.25** Complete

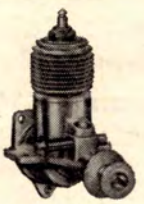
SEE YOUR DEALER . . . Or write us direct

O. K. GLOW FUEL
Pint 85¢

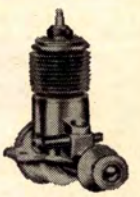
O. K. PLUGS
Short or long — 59¢

O. K. CUB .049
POWER KIT
"Assemble-it-Yourself"
$4.95

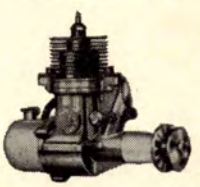
O. K. CUB .049
$5.25



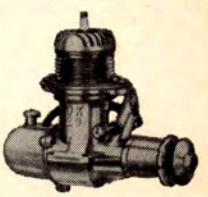
O. K. CUB .074
$5.95



O. K. CUB .099
$6.95



O. K. MOHAWK CHIEF
$9.95



O. K. HOTHEAD
$10.95

O. K. COMBINATION PACKAGES

CUB .039	$4.95
CUB .049	$5.75
CUB .074	$6.75
CUB .099	$7.75

HERKIMER TOOL & MODEL WORKS

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